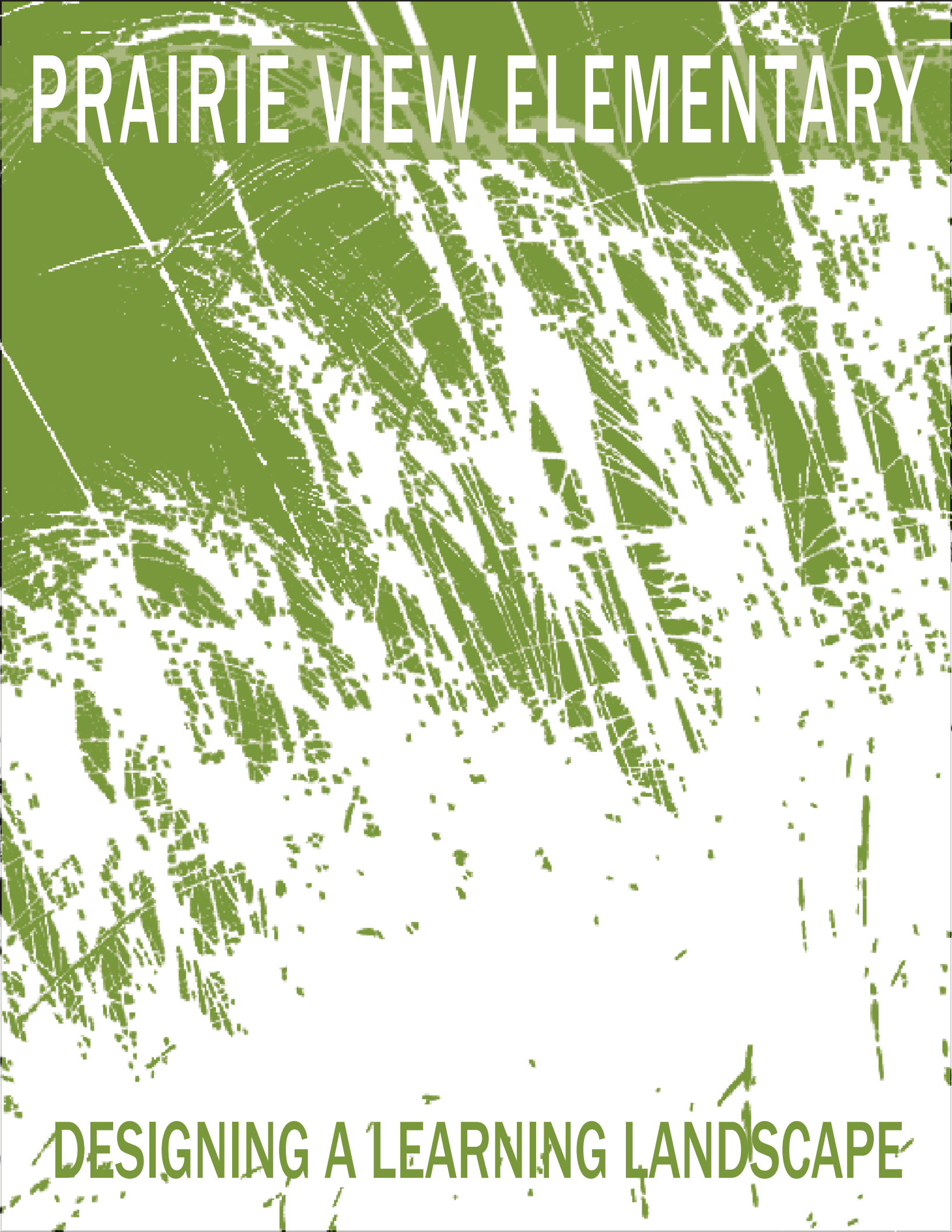
PRAIRIE VIEW ELEMENTARY



DESIGNING A LEARNING LANDSCAPE

Prairie View Elementary School

Designing A Learning Landscape

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LA 404 Thesis Project

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ABSTRACT

This creative project has explored the numerous potential benefits of utilizing the schoolyard and designing it as an outdoor learning environment. Traditionally school systems have taught course material in an almost exclusive indoor environment, although for various reasons, as this project points out, the course material may have more of an impact when presented in an outdoor setting. This project will examine learning theories that support active learning, exploration and play in an outdoor setting. In addition, ways in which the surrounding community can benefit by engaging in the outdoor learning environment will be examined. Selected methods of designing learning landscapes have been studied and analyzed in order to gain an understanding of how to apply the information to the design of an outdoor learning environment at an elementary school. Observation and analysis of existing learning landscapes and interview/survey of school leaders and teachers have been conducted in order to collect primary data. Evaluations of case studies and information from books, web sites and journal articles have been used in the collection of secondary data. Site specific data will be gained through GIS data, aerial photography and site visits.

The second phase of this project was to apply the research findings in the design of an outdoor learning environment at a school. The selected school is Prairie View Elementary in Goshen, Indiana. This school has an opportunity to become a model of utilizing the outdoor environment in order to enhance student exploration, discovery, learning and mental and physical well being and engage the surrounding community. The overarching goal for the learning landscape of Prairie View Elementary will be to engage the students in a fresh and exciting way allowing them to experience and enjoy course material first hand and continue this enjoyment of the natural environment into their adult lives.

TABLE OF CONTENTS

INTRODUCTION

"Nature-deficit disorder is not an official diagnosis, but a way of viewing the problem, and describes the human costs of alienation from nature, among them: diminished use of the senses, attention difficulties, and higher rates of physical and emotional illnesses. The disorder can be detected in individuals, families, and communities." (Louv)

Traditional schoolyards have not been given a high priority in most schools across the country (J. Johnson 7). Although schools view outdoor systems as important enough to educate students about them, they are primarily taught in an indoor classroom. Designers of the learning environment must take the primary responsibility for where certain course material is taught. As experts and studies have noted, student learning, exploration and discovery can be dramatically enhanced by engaging in a well designed outdoor learning environment.

Prairie View Elementary School in Goshen, Indiana currently has an opportunity to transform their currently under-utilized outdoor environment. By focusing on using this outdoor space as an integrated learning landscape, it can give students the opportunity to use the natural environment as a play and recreation medium which can be explored and manipulated. In addition, it can be useful as outdoor space for students to explore, discover, manipulate and learn the natural systems as well as to use the natural outdoor setting in order to supplement and enhance the traditional course material. Lastly, the learning environment can be used in order to connect with, and be a statement of the community's culture and values.

'Although schools view outdoor systems as important enough to educate students about them, they are primarily taught in an indoor classroom.'

FIG. 1.1-6 existing site photographs

LITERATURE

This literature review examines what has been done in the realm of outdoor learning. It analyzes research studies, publications, case studies, journal articles and other literature. The body of the review is broken down into three categories: learning theories that support children engaging in activities, play, and exploration in an outdoor setting; design strategies and outdoor classroom amenities; and the benefits to the surrounding community.

REVIEW

LEARNING THEORIES THAT SUPPORT CHILDREN ENGAGING IN ACTIVITIES, PLAY, AND EXPLORATION IN AN OUTDOOR SETTING

Although historically the field of education did not agree with advocates of outdoor education such as Kurt Hahn the German educator and founder of the Outward Bound Schools movement, many contemporary experts agree that freeing a student to actively engage in play and exploration in an outdoor setting is a key ingredient in a student's education and development. Kurt Hahn believed the natural environment played a key role in learning and self discovery. The thought process behind many schools today is that the school should be a place where academic learning takes place through structured academic activities and that any form of play and non-structured exploration needs to be kept separate. Sponsellor in her book *Play as a Learning Medium*, through analyzing research of other experts and research conducted on her own, she comes to the conclusion that forms of play can be linked to all types of learning including social, cognitive, physical, and emotional learning (Sponsellor 10). She goes on to theorize that play many times is practice for many adult functions. Although this is not a human example she describes how this process can be seen in lion cubs as they learn the essential elements of hunting by playing with other lion cubs (Sponsellor 33). Sponsellor's study does an excellent job of explaining why play and exploration is important in the student's learning process. Although she does go into some detail of what are important elements in the designed play area, if she would have gone into more detail about the play space it would have provided more of a benefit to this project.

'Experts agree that freeing a student to actively engage in play and exploration in an outdoor setting is a key ingredient in a student's education and development.'

FIG. 2.1 learning theory

A benefit of allowing students to engage in an outdoor learning environment is the development of a love of the natural environment and the tendency to utilize it as they grow and mature. However, many schools simply do not put this theory into practice. Johnson mentions the fact that structured activities and classroom work are taking over recess time. A school in Atlanta took this so far as to not provide an outdoor play environment (J. Johnson 7). A growing trend of children today is to spend the majority of their time indoors (Samuel 166)(Cheryl 20), This trend can lead to

what Samuel in his article for Landscape Architecture Magazine describes as “Nature Deficit Disorder.” Samuel, describes the Morton Arboretum designed by EDAW Associates as giving children the opportunity to be exposed to the natural environment and as a result be healthier, both mentally and physically.

The project goals are completed through a large children’s garden which implements spaces such as a curiosity garden, a windmill garden, a wonder pond, and a secret stream among many more opportunities (Samuel 166).

The thought process is that by exposing children to learning and exploring the natural environment that they will continue using the natural environment throughout their lifetime and therefore be healthier both mentally and physically in this sense (Samuel 166). The natural environment is valued to the point that it is taught rigorously in indoor classrooms through numerous science, math, English and a variety of other courses. The question is, why are we teaching about these natural systems that are found primarily outdoors in an almost exclusive indoor classroom? The designers of the learning environments must take responsibility in encouraging a shift in this trend.

Research has shown that in some circumstances teaching course material in an outdoor environment can increase the student’s ability to learn and retain material. Johnson makes the argument that as children are provided with fresh new opportunities and experiences connections between brain cells occur and multiply. In this way the brain develops and the ability to learn is increased (J. Johnson 10). By providing students with an outdoor learning environment that is always maturing and changing with the seasons, students are given the opportunity to engage in new experiences almost every day. This provides the learning potential to be greatly enhanced. Buetell, LEED AP describes a study conducted in California that gave students the opportunity to engage in an outdoor science course. The student’s test scores improved a total of 27%. (Buetell) Providing space outdoors for children to explore, manipulate, make a mess and be provided direct stimuli will contribute immensely to a child’s understanding of what is around them and even self discovery (Stine 15-20) (Future Lab Innovation In Education 28-35) (Sponsellor 38-47) (J. Johnson 9).

‘As children are provided with fresh new opportunities and experiences, connections between brain cells occur and multiply.’

The research of Dr. Selim Iltus embodies what many of these experts express. His research strongly supports the theory of design and use of outdoor schoolyards for play and enhanced learning. He has determined that play has a strong relationship to a student’s creative thinking, problem solving, the ability to cope with anxiety and tension, language development and the ability to use tools (The New Jersey School Oudoor Area Working Group 9).

A major reason for the learning performance of students to be increased is that the student's attitude and motivation for the course content can be improved when taught in an outdoor learning environment. Contemporary author Sharon Stine shares the same view of past author and expert Anne Taylor that by designing outdoor spaces for children to actively engage in course content, carry out an experiment, do an activity etc. students will have a greater chance of actually desiring to be at school and learn the content (Anne and Vlastos 22-30) (Stine 15-20) (Future Lab Innovation In Education 36-42). Johnson in her book Design for Learning: Values, and Process for Enriching School Landscapes, describes a study conducted which used 40 schools across the U.S. These schools adopted a curriculum using "EIC" or Environment as Integrating Context, in which the students engaged in hands on learning using the school's outdoor surroundings. In summary, the results described by Johnson explain that the students improved their test scores in all subject areas including reading, math, writing, science and social studies. Students demonstrated an improvement and understanding in discovery and an awareness of culture and different perspectives and an advanced ability to creatively think to solve real world problems The students overall attitude, enthusiasm and motivation for the content saw a dramatic improvement as well (J. Johnson 15).

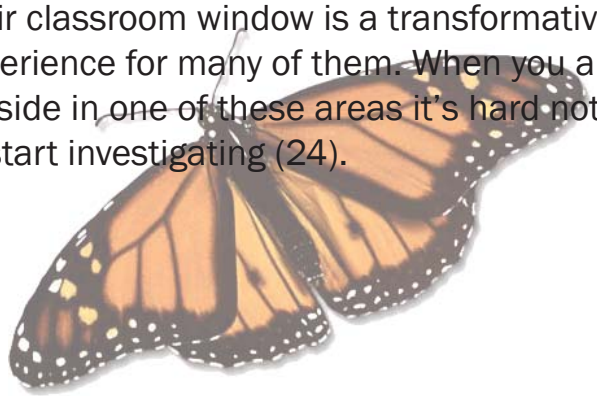
The research points to the idea that by not dictating to the child how to play or how to learn but by giving them the essential tools and structure to learn explore, create, recreate and play they can become better, more creative problem solvers as they grow and mature (J. Johnson 12) (Sponsellor 41-47).

By teaching students exclusively indoors, primarily only two senses are utilized, sight and sound. If the school can take advantage of their outdoor natural resources then more opportunity arises to engage all five senses. In summary, it can bring the course content home and give it a more practical and tangible meaning.

Another example is the complexities and mysteries of the natural environment such as a butterfly habitat garden that can instill a strong desire in students to want to explore and find out what lies beneath the surface. Zach Miner quotes the Houston Independent School District Science Curriculum manager in his article Planting the Seed for Outdoor Classrooms.

'The mysteries of the natural environment can instill a strong desire in students to want to explore and find out what lies beneath the surface.'

Student's record keeping of plant growth and their witnessing firsthand the life cycle from caterpillar to butterfly right outside their classroom window is a transformative experience for many of them. When you are outside in one of these areas it's hard not to start investigating (24).



DESIGN STRATEGIES AND OUTDOOR CLASSROOM AMENITIES

Many different outdoor learning landscape design strategies have been utilized with varying goals and objectives and varying degrees of success. If material that has traditionally been taught indoors can make a better impact on students if it is taught outdoors than incorporating that into the design of the outdoor learning environment is key. What was once limited as an indoor activity such as utilizing computers and the internet can now be taken into an outdoor classroom through laptops and wireless internet. However an outdoor learning environment also opens up a whole new arena of exciting opportunities and material that cannot easily or not at all be taught indoors. Leading learning landscape researchers and designers agree that the outdoor classroom is an ideal location for messy activities and large projects (Nair and Fielding 51-53) (Stine 98-106). Messy or large activities that can be done outdoors can include activities such as art projects, building projects, gardening, or recreational activities like walking and running. For many of these activities the structure and tools can be designed into the learning landscape while a few of the natural materials can be left up to students in order to challenge and develop problem solving and creativity. The space can be as simple as an outdoor terrace that an indoor class such as an art class can spill out onto. It can also be as elaborate as an outdoor studio with Plexiglas easels, mud baking kilns, a vegetable garden to grow food in, a natural resources amphitheater, a storm water riparian habitat, an animal habitat to study and a nature trail to run or walk on. Fanning and Howey Associates an architecture firm that specializes in school and education design along with other experts suggest that outdoor science laboratories can be designed for science experiments and hands on activities such as gardening, raising and studying insects in a butterfly garden, weather-related experiments, and learning about aquatic habitats (Fanning Howey Associates 113) (J. Johnson 30-36). The following case studies are prime examples of schools with designed learning landscape environments that utilize outdoor classrooms such as these.

‘An outdoor learning environment also opens up a whole new arena of exciting opportunities and material that cannot easily or not at all be taught indoors’

In Denver, Colorado Lois A. Brink, a professor of landscape architecture at the University of Colorado Denver founded the Learning Landscapes Initiative. The student studios partner with a professional design firm to design a master plan for an outdoor learning environment at a Denver school that will benefit both the students and the surrounding community (Jost 40-56). Many of the schools brought in a new playground system. Each system provides for two similar but separate areas in order to address different age groups. Although the new playgrounds are a great improvement, the playgrounds shown as examples seem to be the standard manufactured playgrounds with little incorporation of natural materials. Perhaps the play areas could have provided a more naturalized

play area in addition. Learning theories point to play areas that provide stimulation by using many different textures and elements that can be manipulated by children. Eagleton Elementary school in Denver provided a vegetable garden in order for children to study the food growing process. This is a great idea, however the design seems to be lacking adequate student circulation. Small two by six timbers are used for students to walk on. This creates a very dirty environment which may make it difficult for students to return to a regular indoor classroom. Raised boardwalks from which students can walk among the plants, touch them and study them may have been a better option. Many of the elementary schools innovatively use the hardscape. Maps, Compasses and other words carefully chosen are painted on the asphalt at Ellis Elementary in Denver. The four square courts have the names of continents written in them to help students learn and remember them. Bromwell elementary in Denver utilizes a model of the solar system which is integrated into the paving system. Overall by taking a look at the Learning Landscapes Initiative a designer can take away many ideas as to the design of outdoor learning landscapes.

The design firm Natural Learning Initiatives directed by Robin Moore designed Blanchie Carter Discovery Park at Southern Pines Primary School in North Carolina. The project's goal was to transform the schools outdoor property from a barren area with a desolate playground into a natural outdoor learning educational center as well as a community park (Cunningham). Overall the design was successful in taking an under used schoolyard and bringing out its unique characteristics to use as a learning landscape.

'Many of the elementary schools innovatively use the hardscape. Maps, Compasses and other words carefully chosen are painted on the asphalt'

The learning environment employs a variety of teaching and discovery strategies. Native vegetation and wildlife habitat provide for student exploration. The school uses a bird blind to allow students to study wildlife. One of the more innovative ideas designed into the park is a bio-retention pond and stream garden. This allows students to actively

FIG. 2.2-3 utilizing the hardscape at Ellis Elementary

the vegetable garden at Eagleton Elementary

FIG. 2.4-5 Council ring for outdoor class

students explore and plant a garden

engage in an aquatic habitat and gain a better understanding of the water cycle through stormwater. New, standard play equipment was also incorporated into the design. Other elements are an edible garden in which a maze is incorporated, a log cabin and a long leaf pine forest. The design is successful in creating an environment for students to explore, manipulate and discover the natural environment around them. However the design could have incorporated elements to create places for a more structured outdoor classroom setting. Examples of this could be an outdoor amphitheater or a creative studio.

In Cobb County Georgia, Ford Elementary school utilizes an extensive outdoor classroom which has evolved over time. The school implements an outdoor weather station as well as a designated place to study a stream and pond. The children's garden includes native plantings, a nature trail, a sensory garden, vegetables, and a themed garden. More structured outdoor classrooms take place in two amphitheaters and a covered pavilion structure. Many times art projects are displayed in the garden and music is performed in the amphitheater or pavilion for the community. The school also implements programs such as recycling programs (Environmental Education in Georgia). Although the

FIG. 2.6-7 a nature trail to explore and learn

students explore and study a riparian habitat

learning landscape provides the students with a diverse outdoor program, it seems as though a designed play environment has been somewhat overlooked. In addition although the stream study provides students an excellent chance to study a riparian habitat the wood deck overlook is somewhat removed from the stream. Perhaps a step down to the edge of the stream could give students a chance to engage the habitat at a more intimate level.

After an analysis of successful existing case studies and literature, it has become clear that it is important to balance the play and learning structures. In addition a careful balance of areas for experiential based learning where the student can explore and discover with a more structured outdoor classroom environment to teach class material is key in getting the most out the student's outdoor experience.

'Many experts agree that the local schoolyard can be a critical component of the community. In more than one case the community has partnered with the local school in order to transform an under used schoolyard into an effective outdoor learning landscape. In many cases the schoolyard is also then used as a public park, civic center and cultural statement of the community values.'

THE IMPACT OF THE SURROUNDING COMMUNITY

Many experts agree that the local schoolyard can be a critical component of the community. In more than one case the community has partnered with the local school in order to transform an under used schoolyard into an effective outdoor learning landscape. In many cases the schoolyard is also then used as a public park, civic center and cultural statement of the community values. Many experts agree that the local schoolyard can be a critical component of the community. While many communities may not have a large portion of public green space to utilize, the schoolyard can become a viable option for this. The community image can be greatly enhanced by using the schoolyard as a statement of the community's values, culture and history. In many instances where the community takes ownership in the funding, constructing and maintenance there has been a noticeable difference in the amount of vandalism that occurs (Jost 40-56) (The New Jersey School Oudoor Area Working Group 14) (J. Johnson 19-22) (Myrna). In order for each to be successful the school and community must have a strong relationship, the schoolyard is a direct link in that relationship. This kind of relationship has been seen in the Boston School Yards Initiative and the Learning Landscapes Initiative in Denver, Colorado.

After analysis it seems logical that in most cases for the schools outdoor learning landscape to be successful, it is vital that the school partners with the community.

DESIGN

PROJECT SIGNIFICANCE

Historically schools have not placed the design of their outdoor environment as a top priority (J. Johnson 7). As sources in my research have noted many schools have a very dated and barren play area with no outdoor areas dedicated to academic or recreational learning and development. A growing trend for children is to spend a majority of their time indoors. Research from credible institutes such as the Kaiser Family Foundation and the National Institute of Health in U.S. found that children from age 8 to 18 spend on average as much as 60 hours a week indoors using electronic media, and a serious decline in moderate to vigorous physical activity (Cheryl 20). This presents this generation and society with a variety of problems due to a lack of contact with the natural environment and real world experiences. Are children missing out on learning and self discovery opportunities that spending time outdoors offers? This project asks the question, is a designed outdoor learning environment beneficial enough to place as a top priority? If the traditional schoolyard is given value and designed as an outdoor learning landscape and schools adopt this practice it can significantly change the educational curriculum and environment. In addition the realm of outdoor learning environments at schools is a fairly contemporary issue in landscape architecture and can have a positive impact on the profession of landscape architecture and its relationship to the educational realm.

BACKGROUND

PROBLEM STATEMENT

This project seeks to challenge the standard schoolyard design by examining ways in which students learning, exploration and discovery can be enhanced by designing a school's outdoor space as an outdoor learning environment. Selected methods of designing a learning landscape will be analyzed. In addition this project will explore possibilities of how the surrounding community can benefit to engage in the school's outdoor learning environment. This research has been applied towards designing a school's outdoor space as a learning landscape that connects with the surrounding community.

MISSION STATEMENT

The mission of this project is to analyze and determine ways in which students learn in an outdoor setting and the design methodologies to maximize this experience. The design is a learning landscape in which the students will have the opportunity to actively engage in order to explore, discover, test, manipulate, and ultimately learn the systems of the surrounding natural environment as well as to supplement and enhance traditional course material.

GOALS & OBJECTIVES

Provide outdoor space for students to explore, discover, manipulate and learn the natural systems

- Nature trails
- Habitat and eco-system models
- Themed gardens

Supplement and enhance the course material

- Outdoor classrooms
- Model of the solar system, world map
- Zones to learn specific subjects

Connect with the community

- Outdoor performance space
- Strong pedestrian connection
- Accessible Pathways

Use the natural environment as a play and recreation medium

- Enhance the existing play structure
- Implement a nature trail
- Integrate a disc golf course

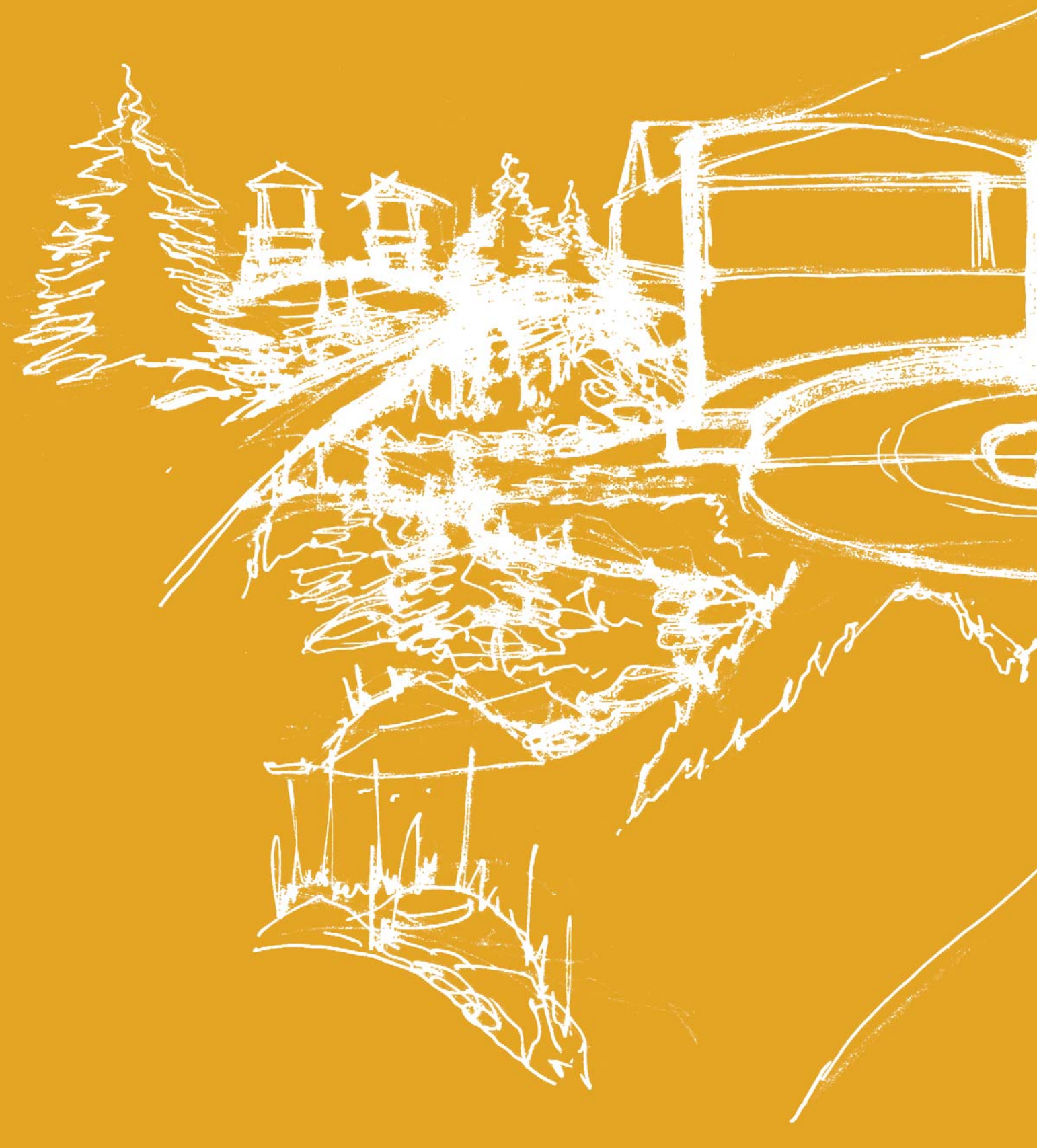
SITE SUMMARY

The outdoor learning environment is designed at Prairie View Elementary School in Goshen, Indiana. The school property is approximately 14 acres. However the city of Goshen expressed interest in the past in acquiring a portion of the agricultural fields surrounding the school in order to incorporate a community park with the outdoor learning environment. This project suggests the agricultural fields directly west be annexed and phased into the project as a community park and direct connection with the community. The site is owned by the Goshen Community School Corporation. The immediate surroundings of the school are farm fields. Just beyond are primarily single family residential uses, with an apartment complex and Waterford Crossing Retirement Community to the west, providing an opportunity to make a strong pedestrian connection to the elementary school. The school is located just less than a mile east of State Road 15 which is a major transportation/commercial corridor which runs right into the heart of the downtown and becomes Main Street for the city of Goshen.

To the west of the elementary school the existing Maple City Greenway would provide a great connection to the outdoor learning environment and community park. The clients which are the city of Goshen and the elementary school's vision was to create an outdoor learning environment for the students in conjunction with a park for the community to engage in. The elementary is very new and therefore any vegetation on site is very young. A large berm constructed to the south obstructs the view to the fields. The lack of vegetation presents a wind problem as well as a view shed problem. The schoolyard also lacks adequate shade. The north portion of the site includes a planted stormwater retention area. To the south west there are two stormwater detention fields with drains located in them to take care of the water. These areas are a stormwater riparian habitat opportunity. The site contains manufactured play structures that can be enhanced. In addition to the west of the schoolyard is an oval shaped walking path that presents an opportunity to expand, naturalize and enhance as a nature interpretive trail.

FIG. 3.1-2 existing site photos

DESIGN



METHODOLOGY

PROGRAM

ACTIVITIES & DESIGN ELEMENTS

1. Designed outdoor spaces for traditional course material to be taught.
    a. Amphitheater space
    b. Covered Pavilion Space
    c. Greenhouse or other enclosed space for use in the winter months
    d. Quiet and peaceful outdoor spaces for students to read, study and reflect in
    e. Designed themes such as math, solar systems, continents designed into the outdoor environment to reinforce concepts taught in the indoor classroom
    f. Art Studio
    g. Weather study Station
2. Designed outdoor spaces for students to explore, discover, and manipulate the natural environmental systems and learn course material
    a. Natural habitat
        1. Prairie
        2. Woodland
        3. Mountain
        4. Riparian
    b. Butterfly and Insect habitat
    c. Themed garden space
    d. Nature Trail
    e. Bird Blind to study birds and other habitat
3. Recreational spaces that incorporate natural materials and systems to enhance the students skill building through play and recreation
    a. Enhance the existing manufactured play spaces
    b. Incorporate topography change in order to give climbing opportunities and give students a different perspective on the land
    c. Incorporate natural materials such as small boulders, sand, wood and more that can be climbed on, explored and manipulated
4. Intentionally designed elements that reflect the supporting community and encourage the use of the outdoor learning environment.
    a. Provide outdoor space for Art displays and student performances

b. Provide a community park destination

c. Provide space for community engagement such as a disc golf course

DESIGN CONCERNS

1. Safety
    a. Appropriate risk taking opportunities to learn with no actual danger involved (Stine)
2. Non Toxic Plants
    a. A plant selection that provides no harm if accidently consumed
3. No Thorny Plants
    a. A plant selection that will not harm students if explored and touched

SITE VICINITY, SETTING & CONTEXT

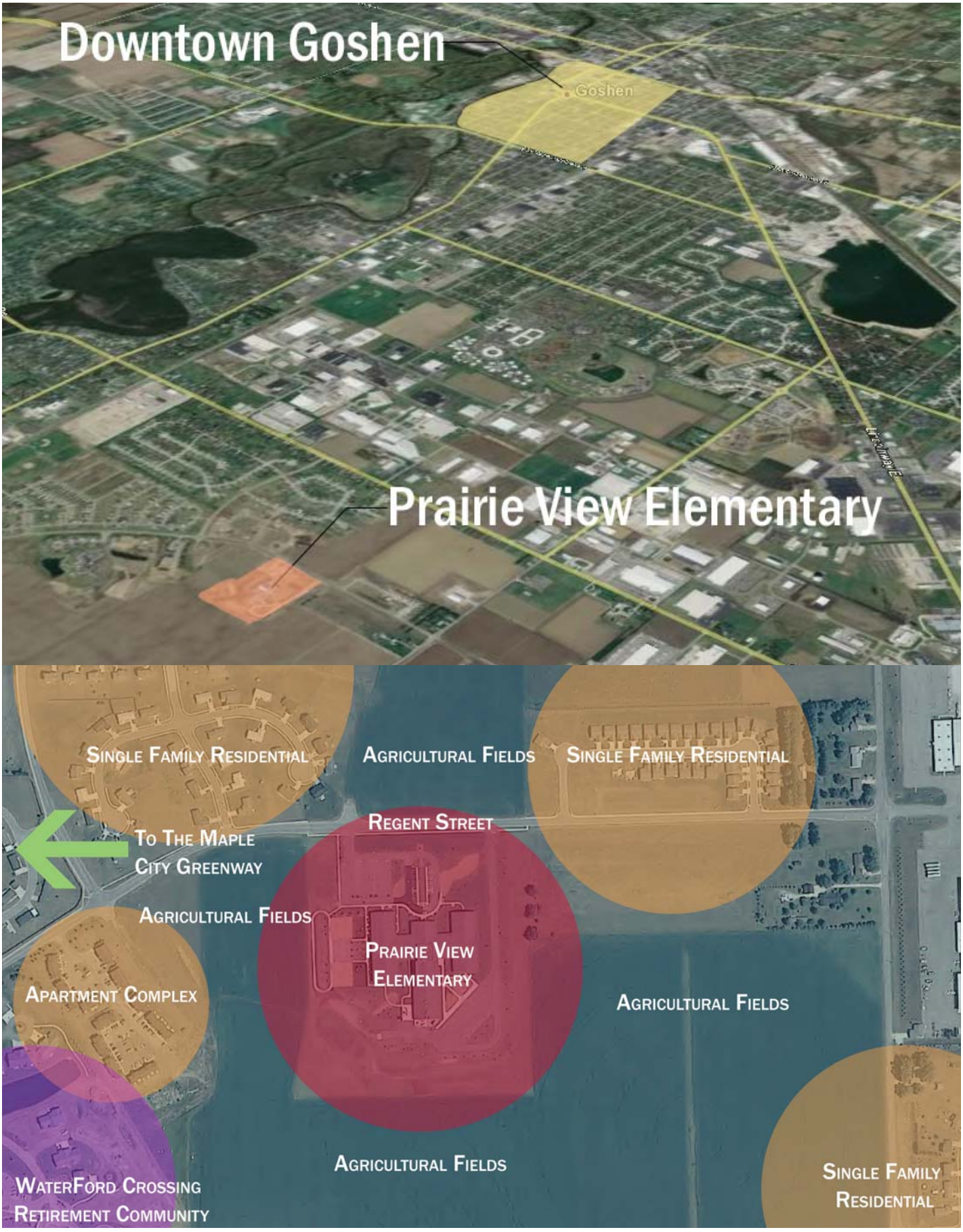


FIG. 4.1-2

SITE INVENTORY

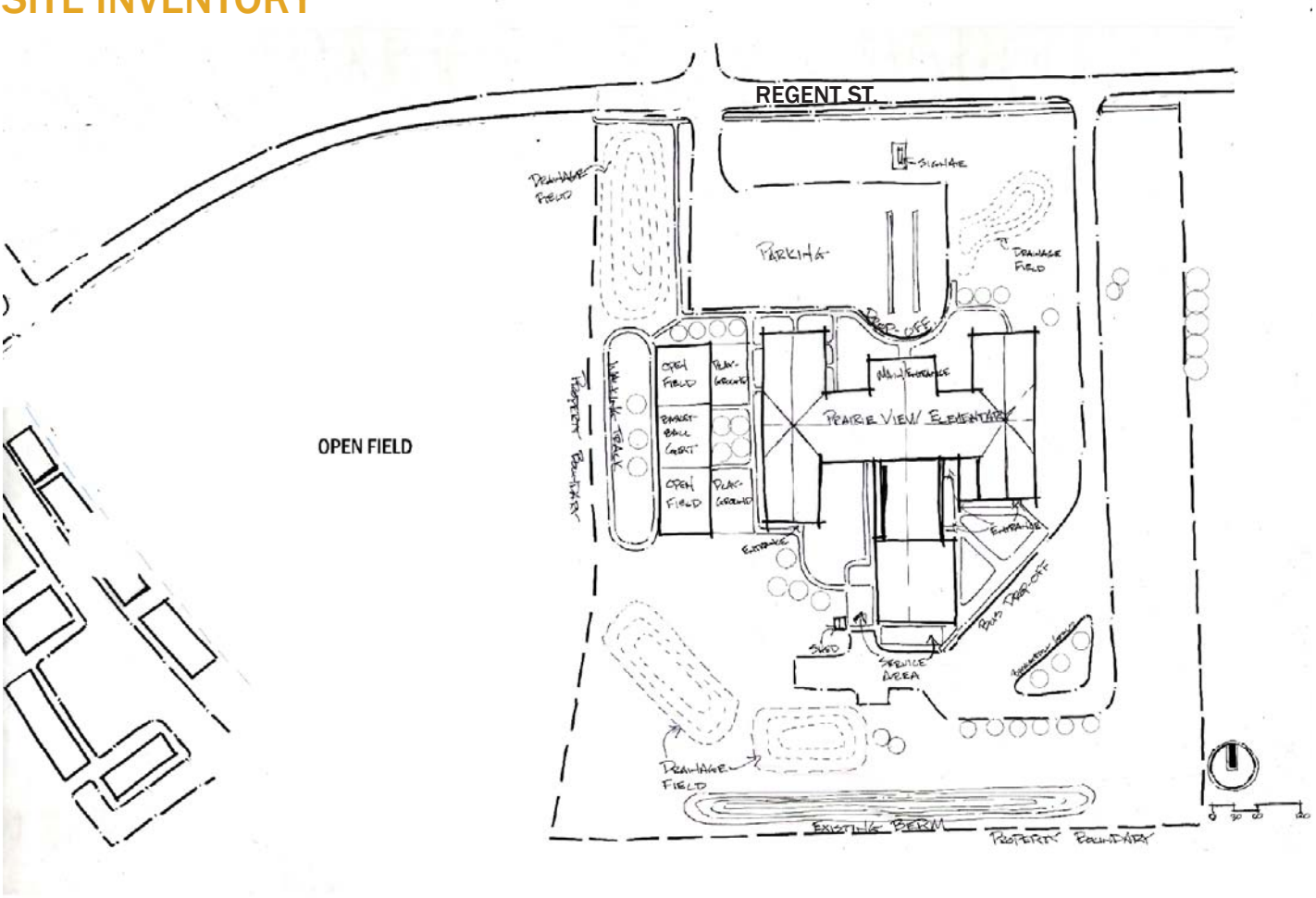


FIG. 4.3

Primarily surrounding the project site are agricultural fields and single family residential. Directly to the west is an apartment complex and the Waterford Crossing Retirement Community. Also noteworthy is the Maple City Greenway just off the map to the west of the site that would serve as a great connection to the project site.

Prairie View Elementary School is located on Regent Street. An existing sign welcomes students, faculty and visitors. Sidewalks are in place to the north of the site but do not continue on the south side of the road to the east. Faculty and Visitor parking and drop off is to the north, while student bus drop off happens to South of the school. The school's maintenance zone happens around the south side of the central wing. The outdoor recreation zone is the to the west of the school with a walking track, basketball court and manufactured play equipment. Retention basins are located both to the north and south of the building. A large berm runs along the southern edge of the school property.

SITE ANALYSIS-THE IMMEDIATE SCHOOL PROPERTY

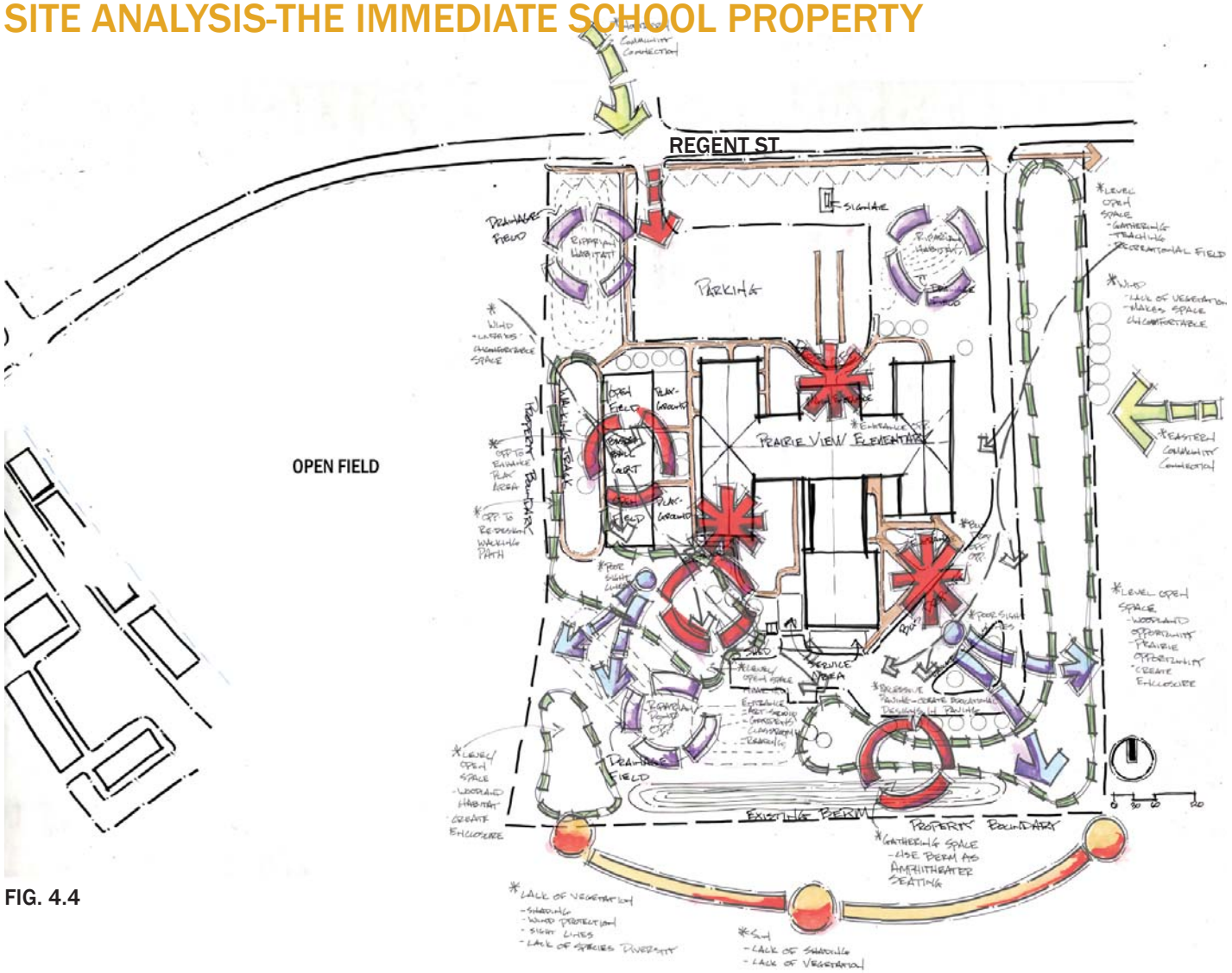


FIG. 4.4

The immediate school property existing conditions presents a number of opportunities that can be taken advantage of. A large portion of the site consists of minimal grade changes and is fairly open making it a cohesive to place design elements in these areas. Pedestrian and vehicular entrances can be enhanced in order to create a purposeful statement about the school and community. Although there is an excessive amount of paving a portion can be creatively used as a teaching tool and thing of beauty and not seen as an eye sore. There are opportunities in the recreation realm to enhance the existing recreation amenities and also design new features for student, faculty and community use. Taking into account the surrounding and the expected future growth, it becomes clear that community connections are vital to the success of the project.

Following the opportunities of the existing conditions there are also a number of constraints that must be addressed throughout the design. First and foremost there exists a lack of diversity. This is found in a number of things such as, but not limited to, vegetation, spaces and transitions, micro-climates and outdoor teaching tools. This leads to a lack of imagination or creative spark. Currently the site micro-climate lacks shade and wind screening. Sight lines and screening need to be taken account, as there is nothing on site to stop the eye and keep the attention there.

SITE ANALYSIS-THE SCHOOL PROPERTY WITH COMMUNITY SPACE

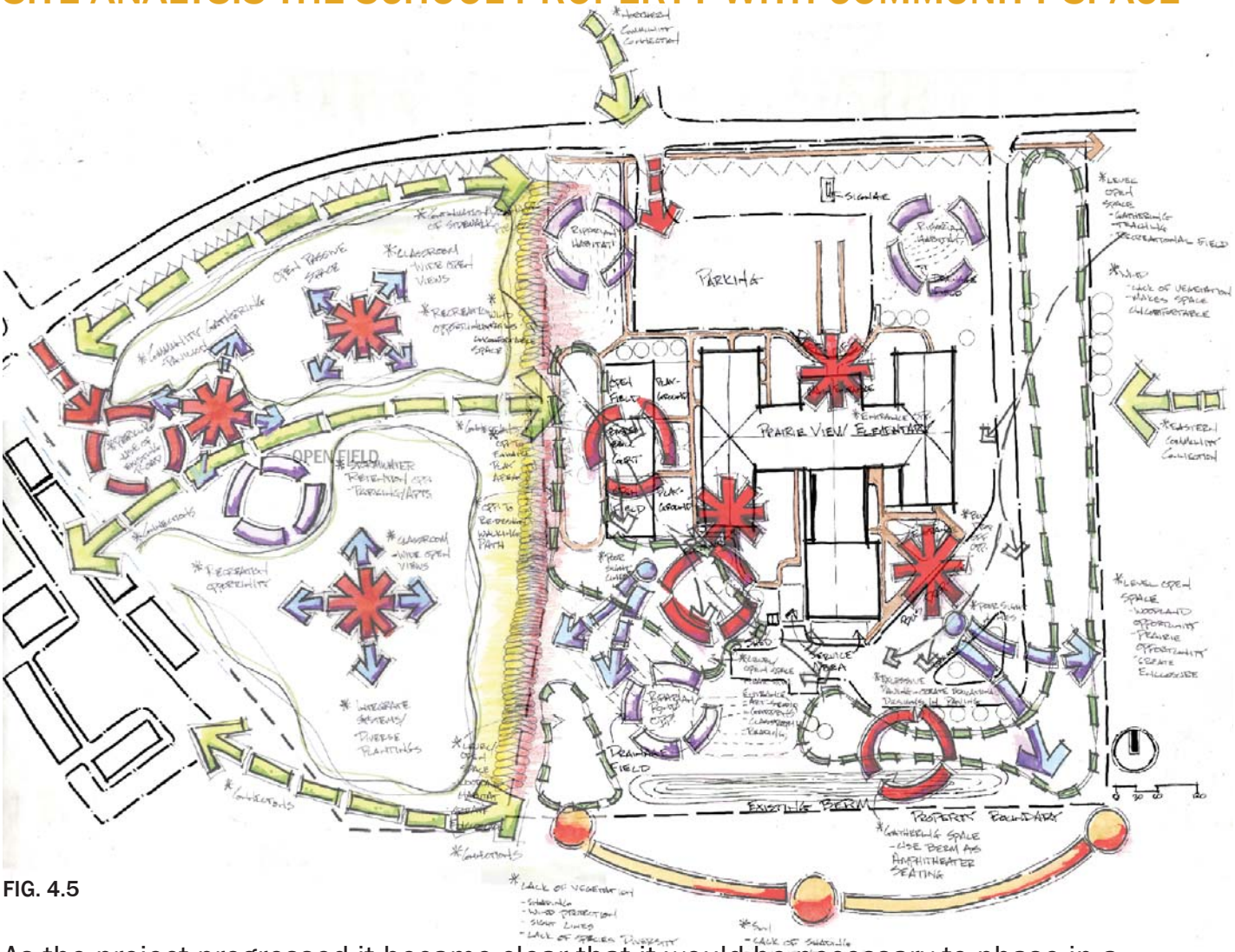


FIG. 4.5

As the project progressed it became clear that it would be necessary to phase in a community park and extension of the school's outdoor learning environment which would utilize the space directly west of the school, leading up to the apartment complex. This space is currently agricultural fields. This would make a direct connection with the community and provide a much needed community learning, gathering, passive and recreation space.

The phase in presents number of opportunities that the project can take advantage of. The school's outdoor learning environment can be seamlessly phased into the community park. This would make a strong connection with the surrounding, specifically the apartment complex, Waterford Crossing Retirement Community and the Maple City Greenway. The existing road lends itself to parking for the project, which could further lead to a stormwater riparian system that could take water off of the parking lot as well as the apartments to the west.

Currently the site is agricultural fields. This presents a number of constraints that must be dealt with in the design. A clear lack of diversity exists on the site as well as harsh micro-climates and a lack of site line screening.

All of these elements, both opportunities and constraints were considered during the design of the project.

CASE STUDIES-DISCOVERY FRONTIER, GROVE CITY, OHIO

FIG. 4.6-9

Discovery Frontier in Grove City, Ohio was designed by MSI out of Columbus Ohio. Discovery Frontier uses the model of a solar system as a foundation in order to engage the children in this community park. The design uses a series of zones to encourage different skills and play types that the children take part in. Discovery Frontier employs a variety of colors and textures in order to fully engage the child. A variety of uses are provided from, climbing a rock wall to exploring the Earth's geography and digging up fossils in a purple sandbox. Although the overall design is very creative, the site micro-climates may have been overlooked to some degree. With a lack of shade and wind screening the micro-climate may be somewhat harsh at times.

Discovery Frontier provided good insight and inspiration for this project.

CASE STUDIES-CLARKSON ENVIRONMENTAL CENTER, MICHIGAN

FIG. 4.10-13

The James Clarkson Environmental Discovery Center in White Lake Township Michigan is 77 acres dedicated to the education of it's visitors. The discover center's education subjects are three major habitats of the midwest. The habitats on display are the prairie, woodland and riparian. This project, in stark contrast to the Discovery Frontier project, employs passive methods in order to engage it's visitors. The design caters to a more passive reflective nature, rather than a call to a specific action. It displays the pristine systems and allows the visitor to make of it what they will. Nature trails looping back on themselves allows the visitor to chart their own course and explore the wilderness. Council rings allow for groups to sit, be instructed and take in what is happening around them. Unique benches provide resting stops for the individual or small group to reflect. As this project reaches its goal of preserving the pristine systems while allowing visitors to be immersed in them, perhaps a more active zone within the park could have been considered. This could have served in order to pique the interest of a larger user group.

CASE STUDIES-LEARNING LANDSCAPES INITIATIVE, DENVER

FIG. 4.14

The different outdoor learning environment designs of the learning landscapes initiative in Denver, Colorado have served to inform the design of Prairie View Elementary's learning landscape. Unique design solutions such as creatively utilizing the pavement on site has been integral in this project. The importance of utilizing natural materials such as rock to enhance recreation environments and even provide spaces to site and reflect was realized through this case study. The idea of a vegetable garden or themed garden was reinforced through the study of the Learning Landscapes Initiative. Students are able to learn the process of where food comes from and what it takes to develop and grow a garden that produces food. A variety of outdoor classrooms and gathering spaces were introduced. Many of these spaces use the natural environment in order to help focus students, spark creativity and inspire them. Although low maintenance design solutions is an important consideration, a few of the design solutions propose an excessive amount of paving that may have been well served to have been broken up by plant material.

These case studies along with others served to guide and inspire the design solution of Prairie View Elementary's outdoor learning environment.

THEORETICAL FRAMEWORK DIAGRAM

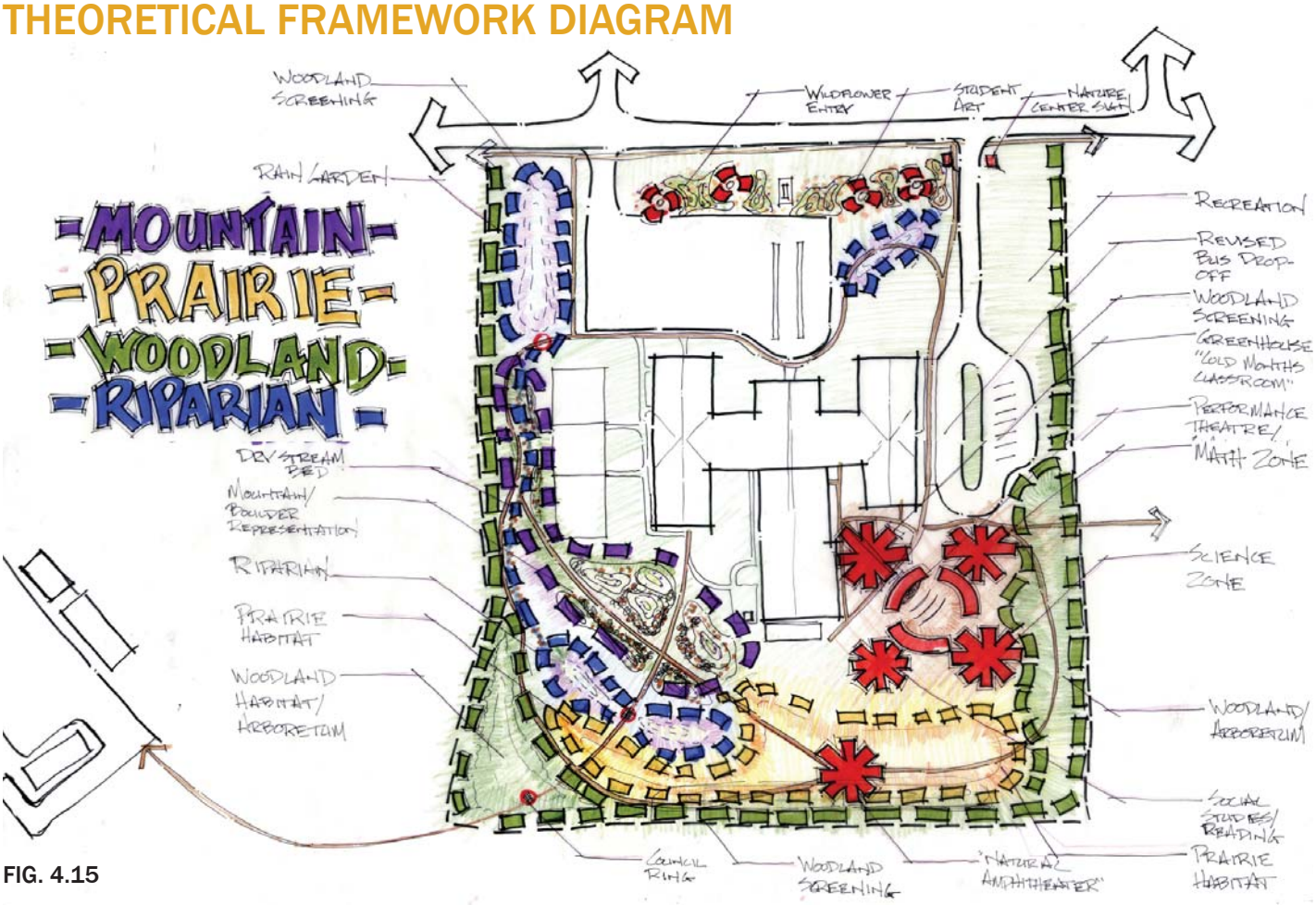


FIG. 4.15

After careful review of case studies and design solutions studies, a theoretical framework concept diagram was created to base the design of the following concepts. This diagram utilizes both an active and passive component. It illustrates that in close proximity to the school building an active zone is utilized. This would be a framework in which different classrooms and uses would take place. Specific subjects such as math, science, social studies and literature could be emphasized. This space would be conducive to all students but especially younger students who may not be able to walk to the outer edges of the property and would be engaged by brighter colors and a variety of textures.

As the project expands, it takes on a more passive nature. Four natural systems would engage the students. Three very real and native to the project location would be the prairie, woodland and riparian. A fourth more imaginative system used as a creativity spark would be the mountain system. The woodland system would serve as both an arboretum and screening to the edges of the property. The prairie system would take advantage of the flat open space on site and be a reminder of what was on the site before development. The riparian system takes advantage of the retention basins and drainage on site to create ponds, rain-gardens and marshes. The mountain system would be a series of topography changes, and a unique rock and plant palette that would enhance the recreation environment as well as provide space for reading, writing, reflection and imagination.

DESIGN ITERATION 1

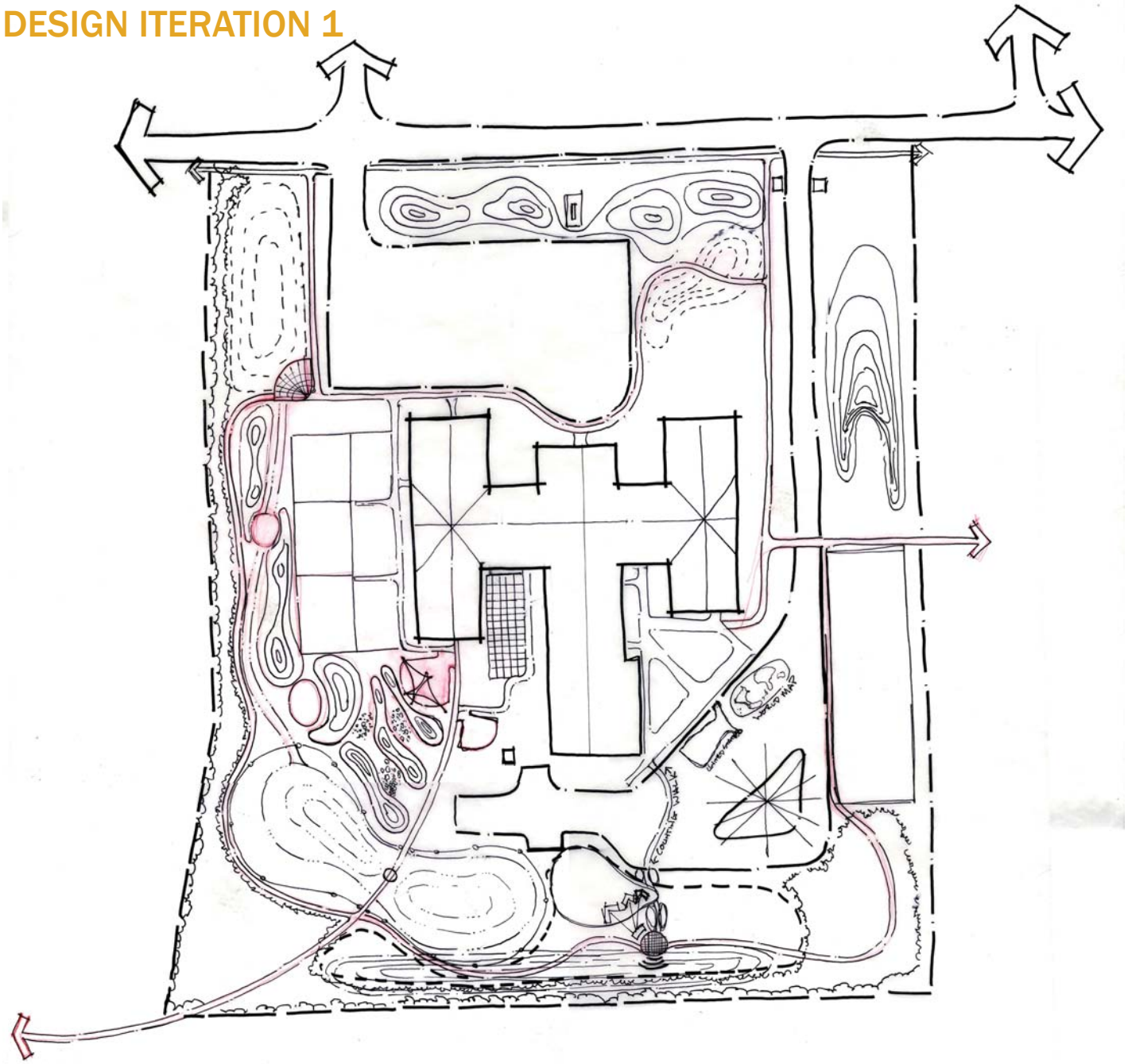


FIG. 4.16

Concept 1 begins to look at utilizing the active space in close proximity as well the passive systems around the rest of the school property. The goal is to design according to the existing conditions and analysis. Sculptural topography defines the entrance. A large gathering space, with outdoor art studio and vegetable gardens are located close to the building to the southwest. Retention basins are utilized as rain gardens, small ponds and marshes. Creative solutions for utilizing the pavement are explored. The southern berm is taken advantage of by implementing a natural amphitheater.

DESIGN ITERATION 2

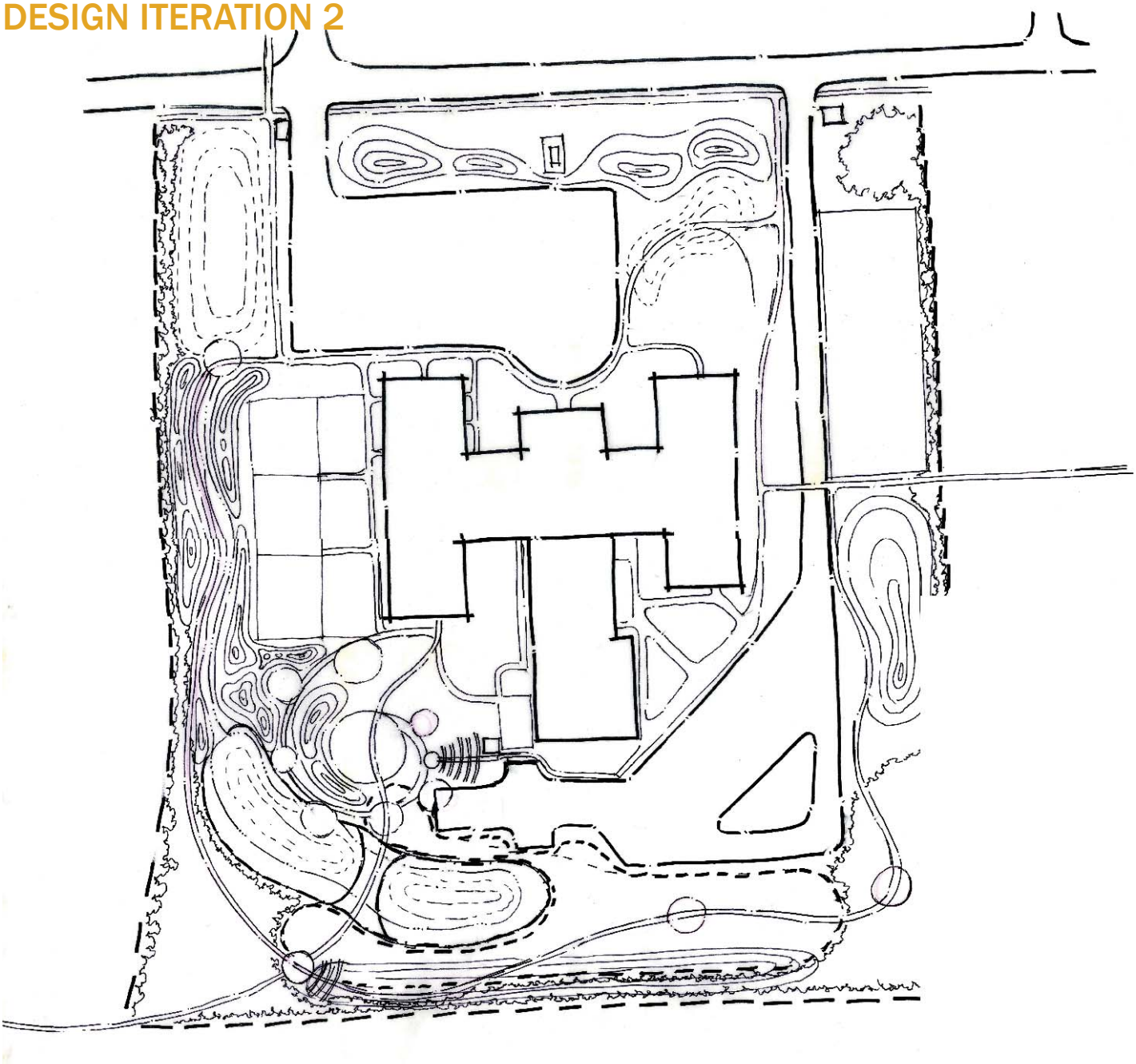


FIG. 4.17

Design concept 2 begins to look at using the solar system as the framework for the active zone in close proximity to the building located to the southwest of the building. The passive natural systems spin off of this solar system framework to provide space to explore along the nature trail. This study explores how the pond habitat might be retrofitted from the original retention basin.

DESIGN ITERATION 3

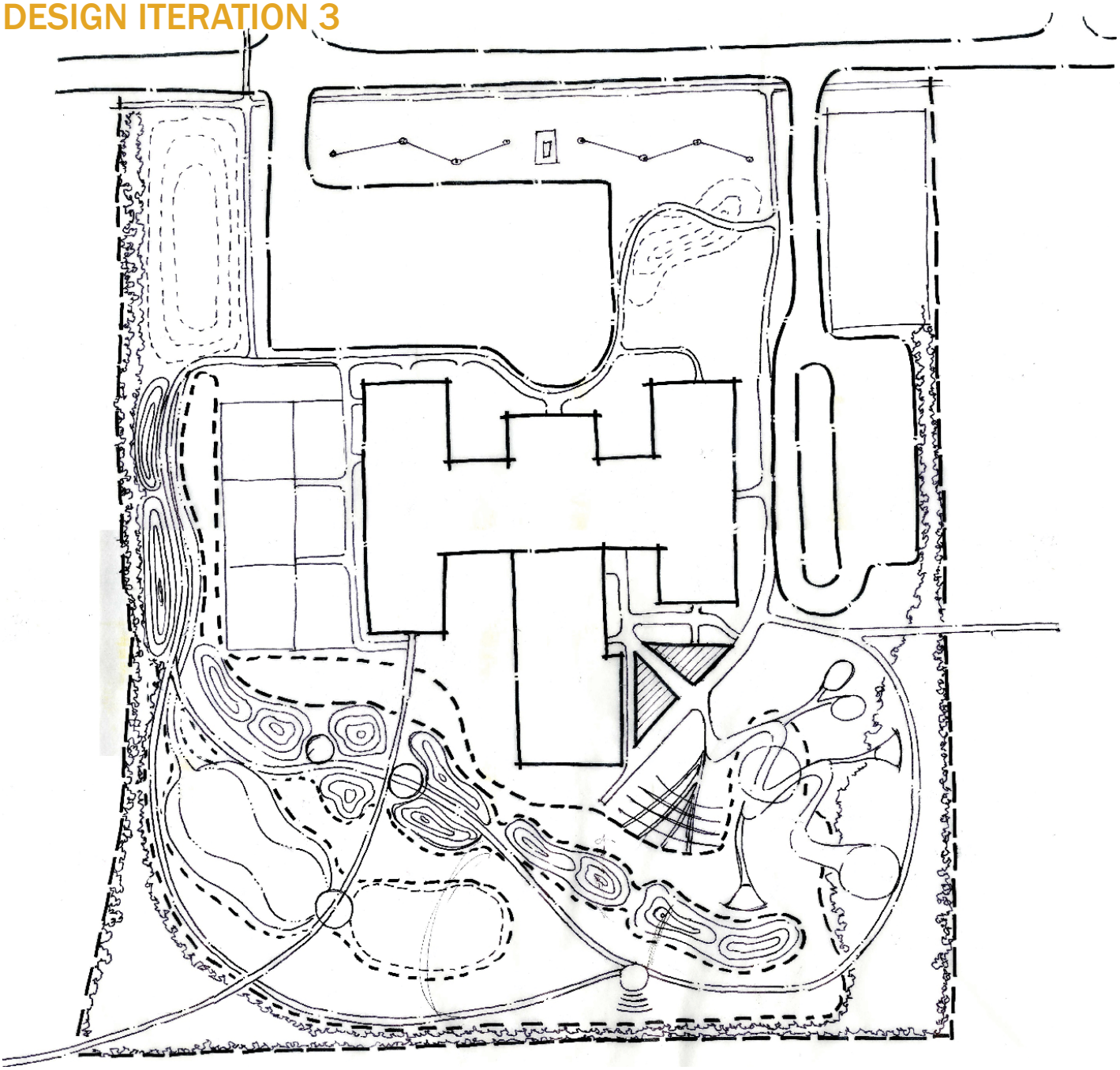


FIG. 4.18

Design concept 3 explored redesigning the bus drop off and parking to the east of the building. This resulted in a much more flexible space in order to weave the natural systems throughout the design. The mountain system became much more prevalent. The active space took on the framework of a river and it's tributaries. The major river formed a path and gathering space while the tributaries formed other classrooms and programmatic elements such as an outdoor art studio, vegetable gardens, sandbox, as well as specific math, science and reading zones. The entry form Regent Street explored using a sculptural element such as a traditional fence row to make a statement. This design studied the relationship between the mountain system and the dry streambed flowing through it and this space transitions into the prairie system.

DESIGN ITERATION 4

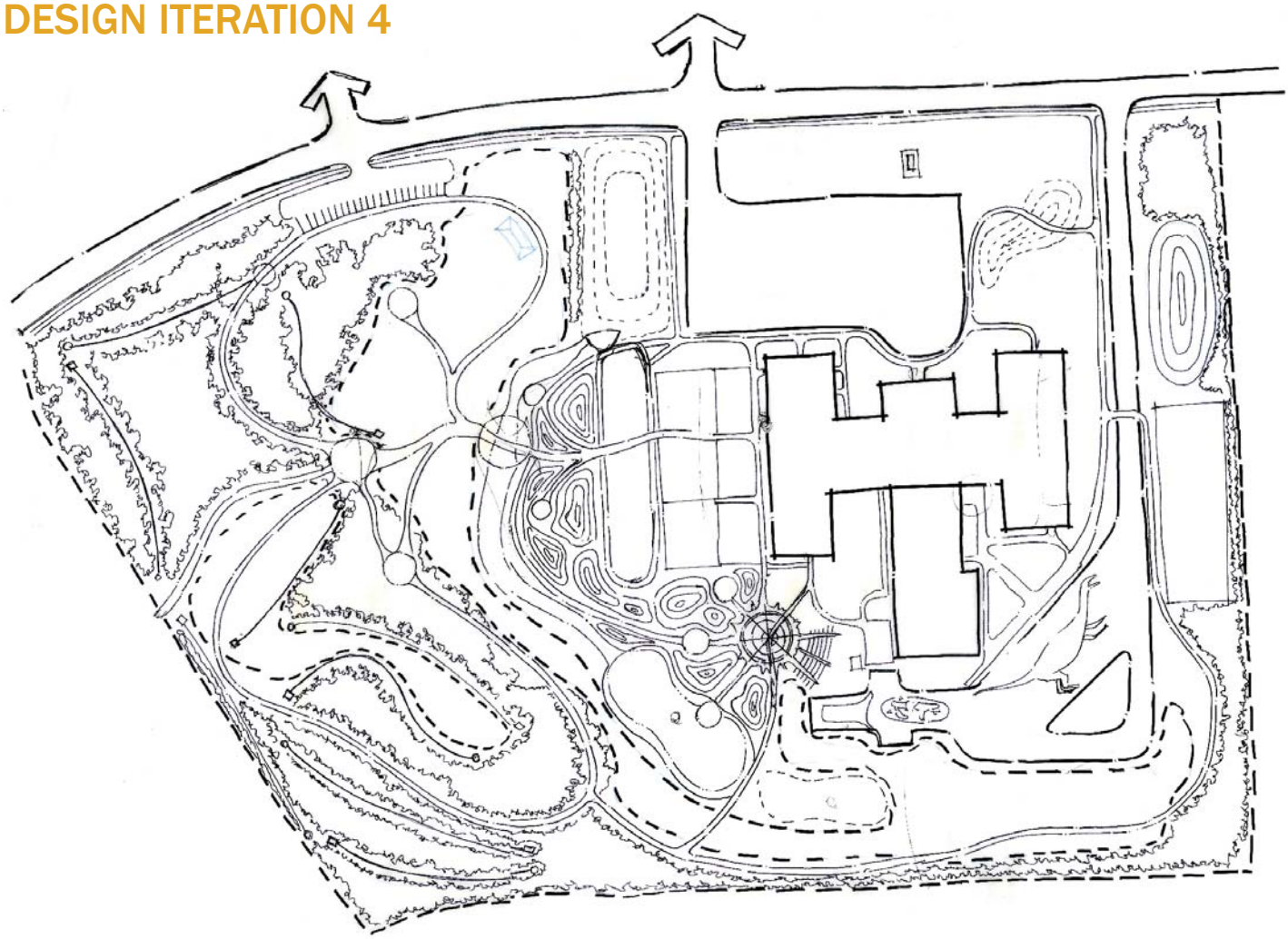
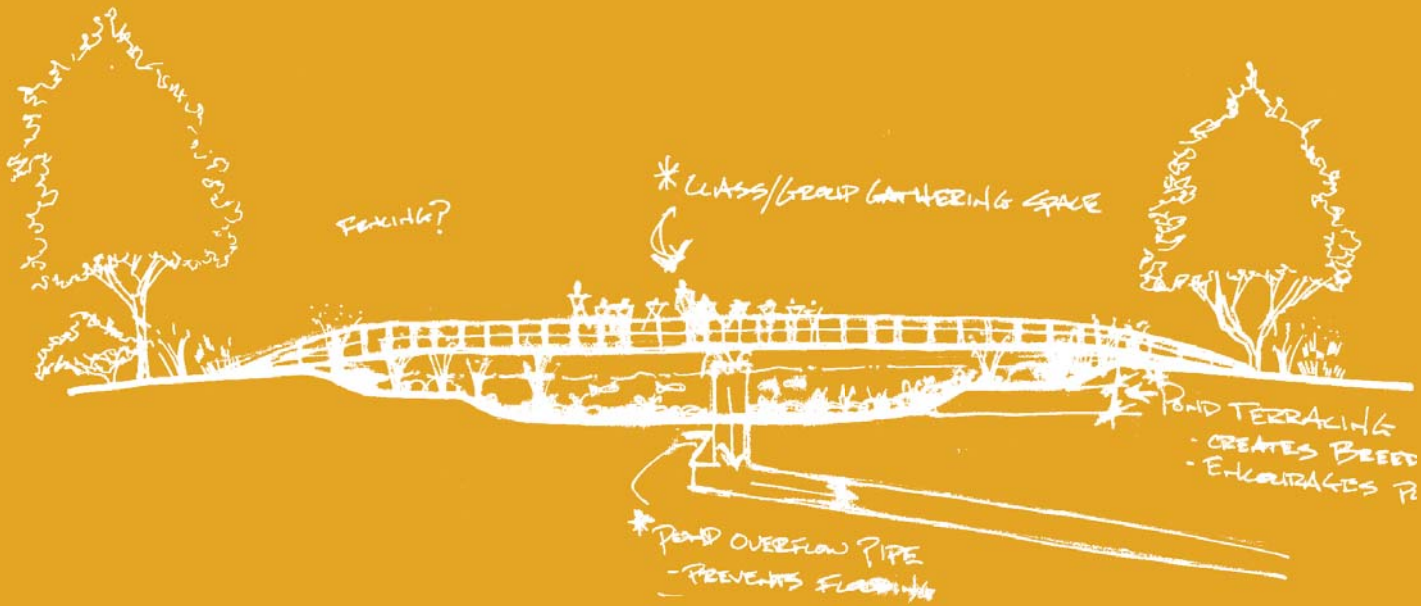


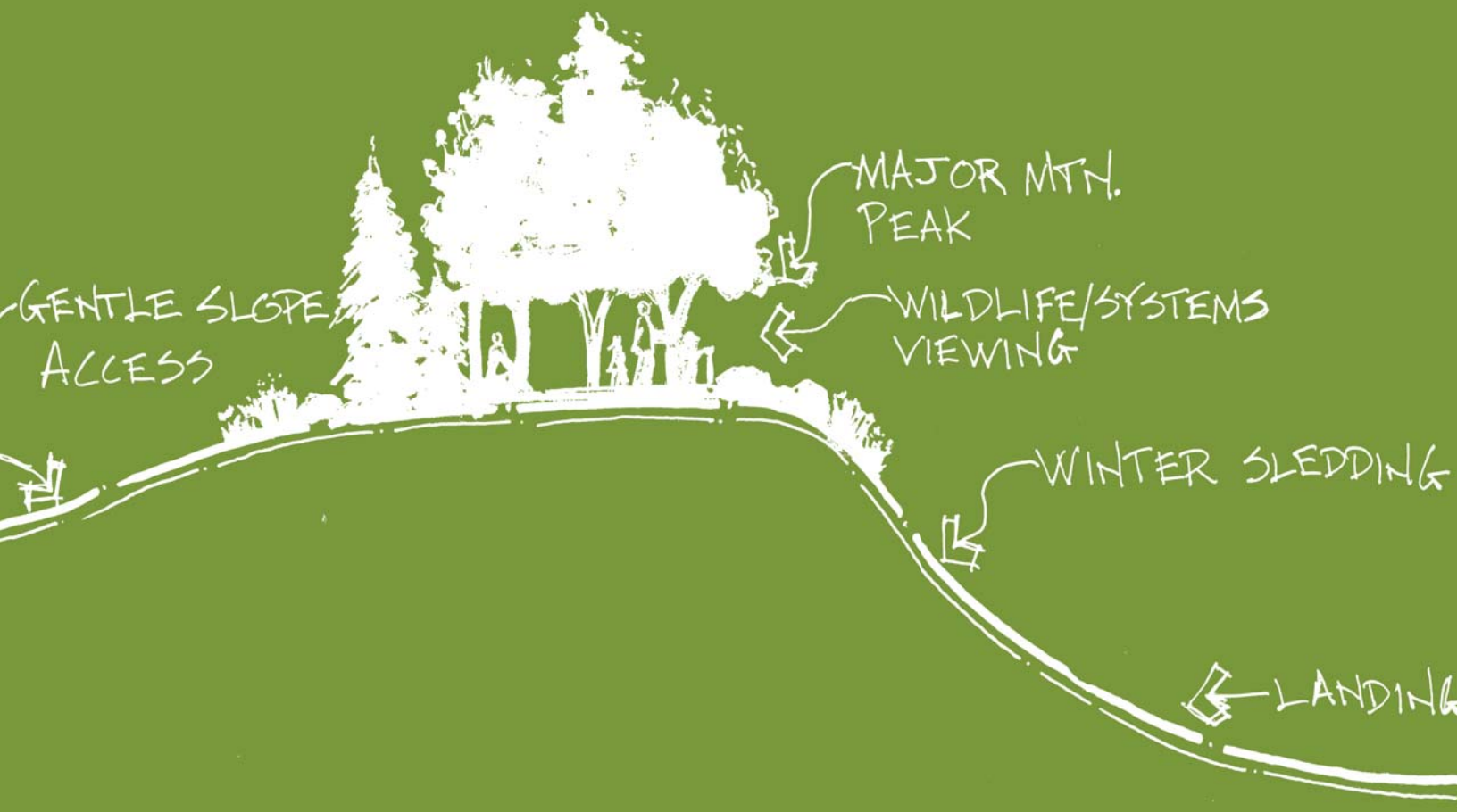
FIG. 4.19

Concept 4 finally began to embrace phasing in an extension of the outdoor learning environment and creating a community park in order to make a strong and direct connection with the community. This design implemented the sun as a foundation for the active zone. The tributary concept is utilized in the connection between the school and major artery flowing through the community park. Tributaries flow off the major artery to form more gathering and reflection spaces. A disc golf course flows throughout the park to provide recreation and exposure to the natural systems for both the students and community members. Parking is added to the north of the community park.

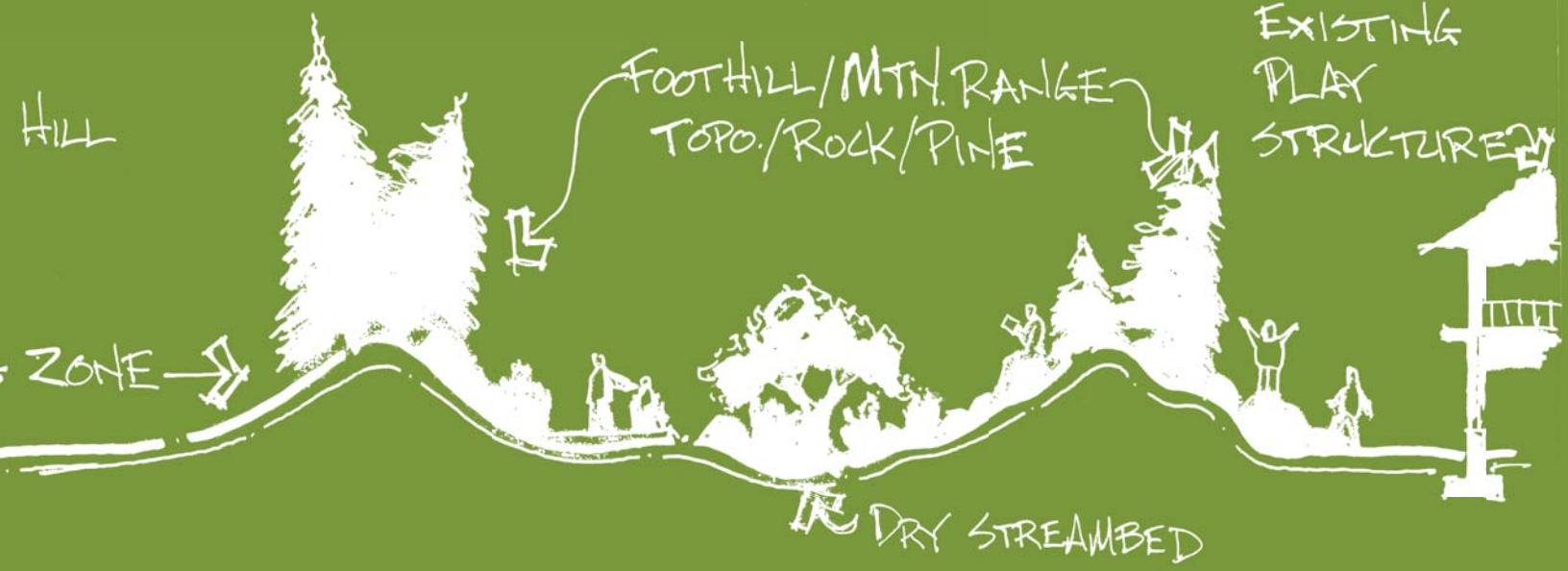

OVERHEAD PLANES?
ELECTRICAL CONNECTIONS WIRELESS
*PRAIRE/WILDFLOWER HABITAT
*SEATING TERRACED OUT OF EXISTING BERM
*PLEXIGLASS EASEL
*EXISTING BERM
*TEACHING/PERFORMANCE SPACE

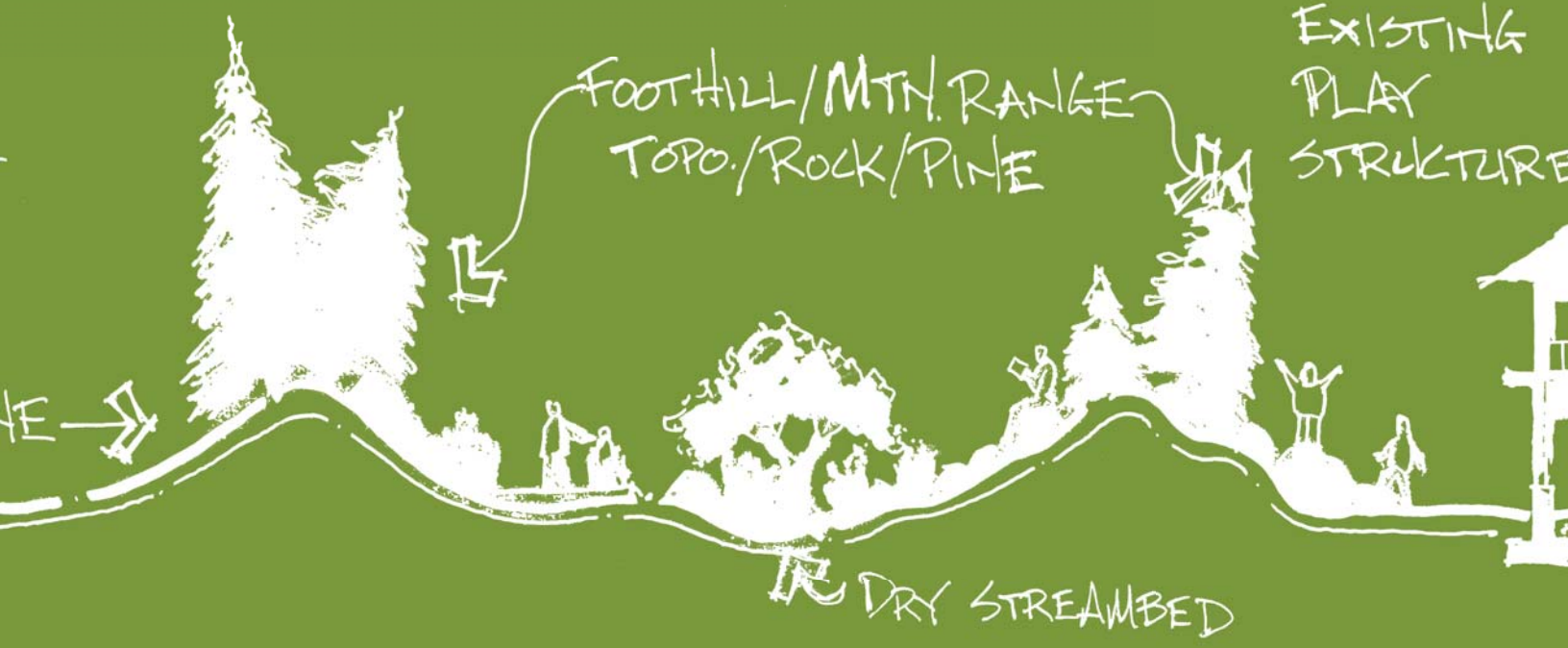

FENCING?
*CLASS/GROUP GATHERING SPACE
POND TERRACING
- CREATES BREED
- ENCOURAGES P
*POND OVERFLOW PIPE
- PREVENTS FLOOD

MASTER

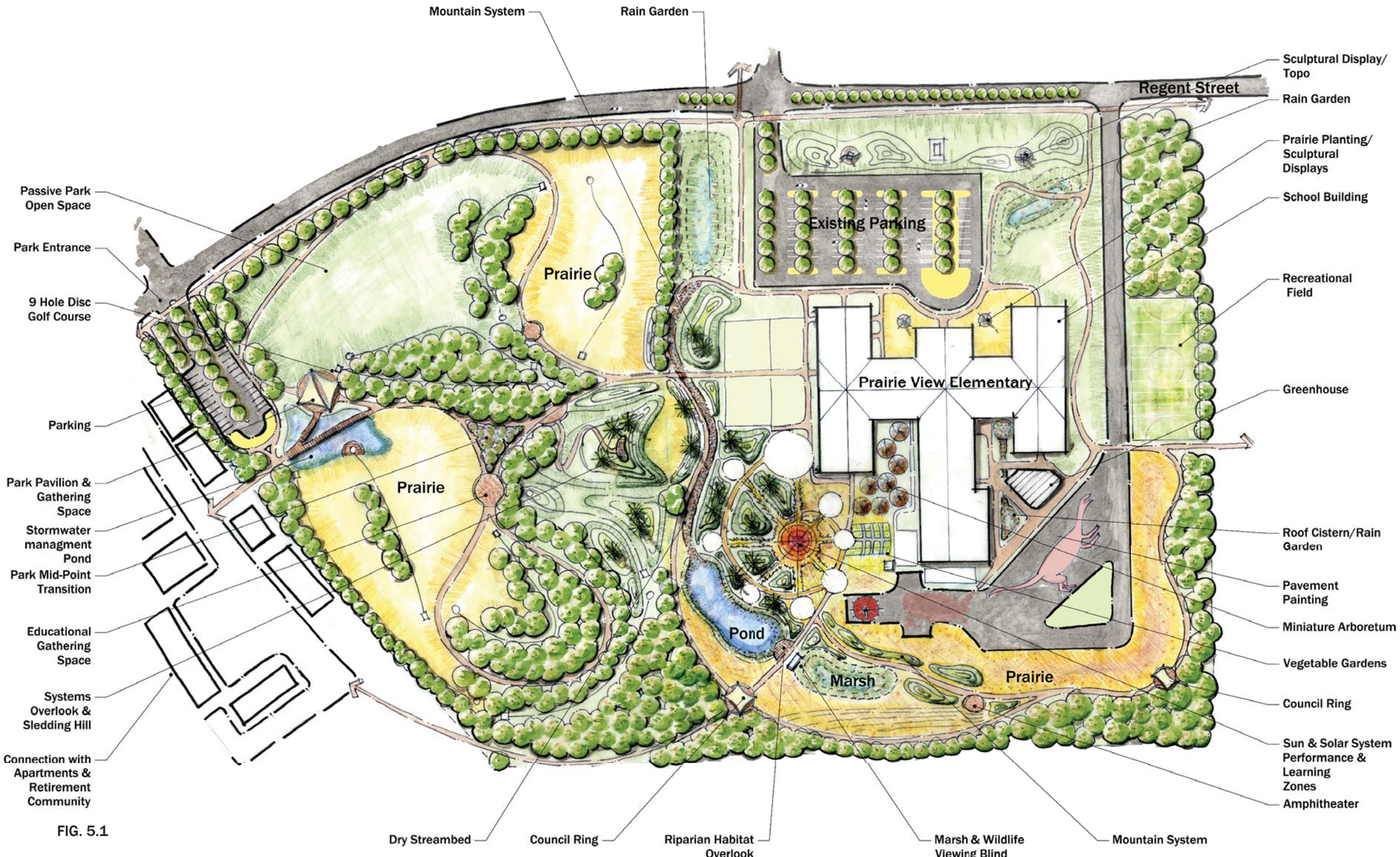

MAJOR MTN. PEAK
WILDLIFE/SYSTEMS VIEWING
GENTLE SLOPE ACCESS
WINTER SLEDDING
LANDING

CONCEPT


HILL
FOOTHILL/MTN. RANGE
TOPO./ROCK/PINE
EXISTING
PLAY
STRUCTURE
ZONE
DRY STREAMBED


FOOTHILL/MTN. RANGE
TOPO./ROCK/PINE
EXISTING
PLAY
STRUCTURE
DRY STREAMBED

Prairie View Elementary Learning Landscape Concept Plan



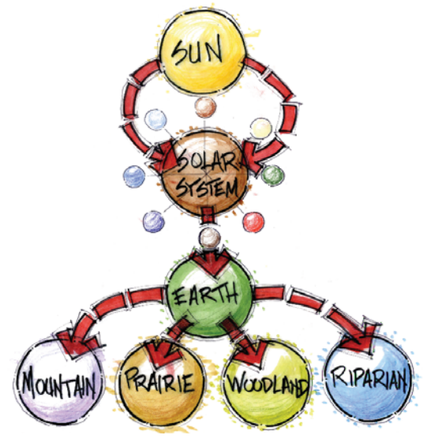


FIG. 5.1

The Prairie View Elementary project takes on a Hierarchy of educational design from the macro level to the relative micro level. The educational elements begin with the sun, which spin off into the solar system. As the scale becomes more specific the solar comes around to the 3rd planet which is the Earth specific zone. As the educational environment moves through the Earth zone it becomes even more specific. The design spins off into four major natural systems of the Earth. Three of these systems are native to the midwest, these are the prairie, woodland and riparian systems. A fourth system is more imaginative, designed to enhance the recreation opportunities and provide a creative spark for students. The pedestrian and vehicular entrances are specifically designed. The main entrance takes on a prairie planting theme, while the southwest entrance takes on a woodland arboretum theme. The southeast entrance takes on a riparian theme as a cistern takes rainwater from the roof and transfers it to a rain garden. The community park is seamlessly phased in to the educational environment. This creates a direct connection with the community. A sledding hill creates the major peak for the mountain system. Parking extends into the site in close proximity to the community pavilion. From this space a passive open space begins, as well as a disc golf course to enhance the student and community recreation opportunities.

The Sun Gathering & Performance Space

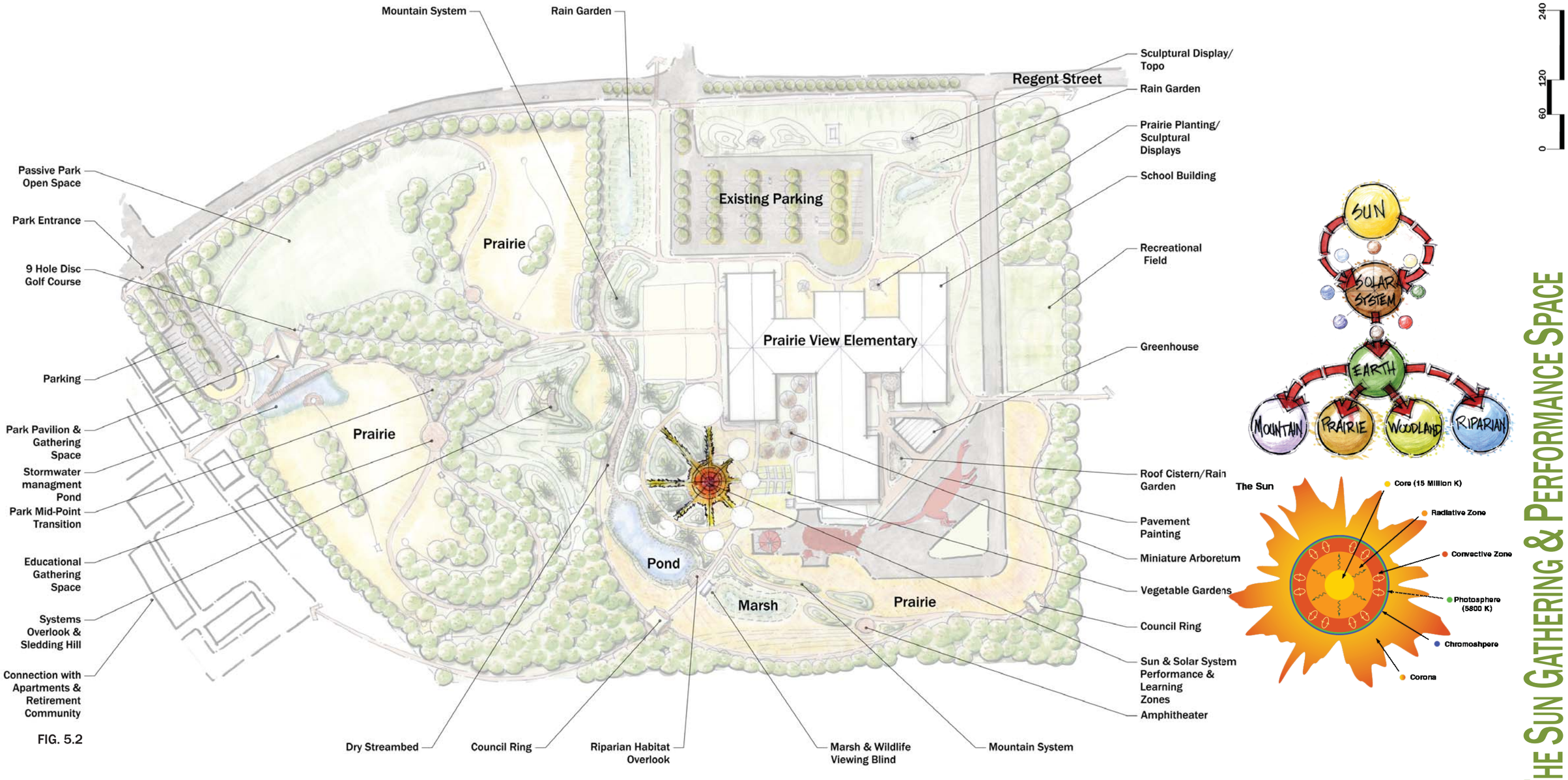


FIG. 5.2

The educational sun space creates a central gathering space. This would be used for large classes and school and community performances such as theater, art and music.

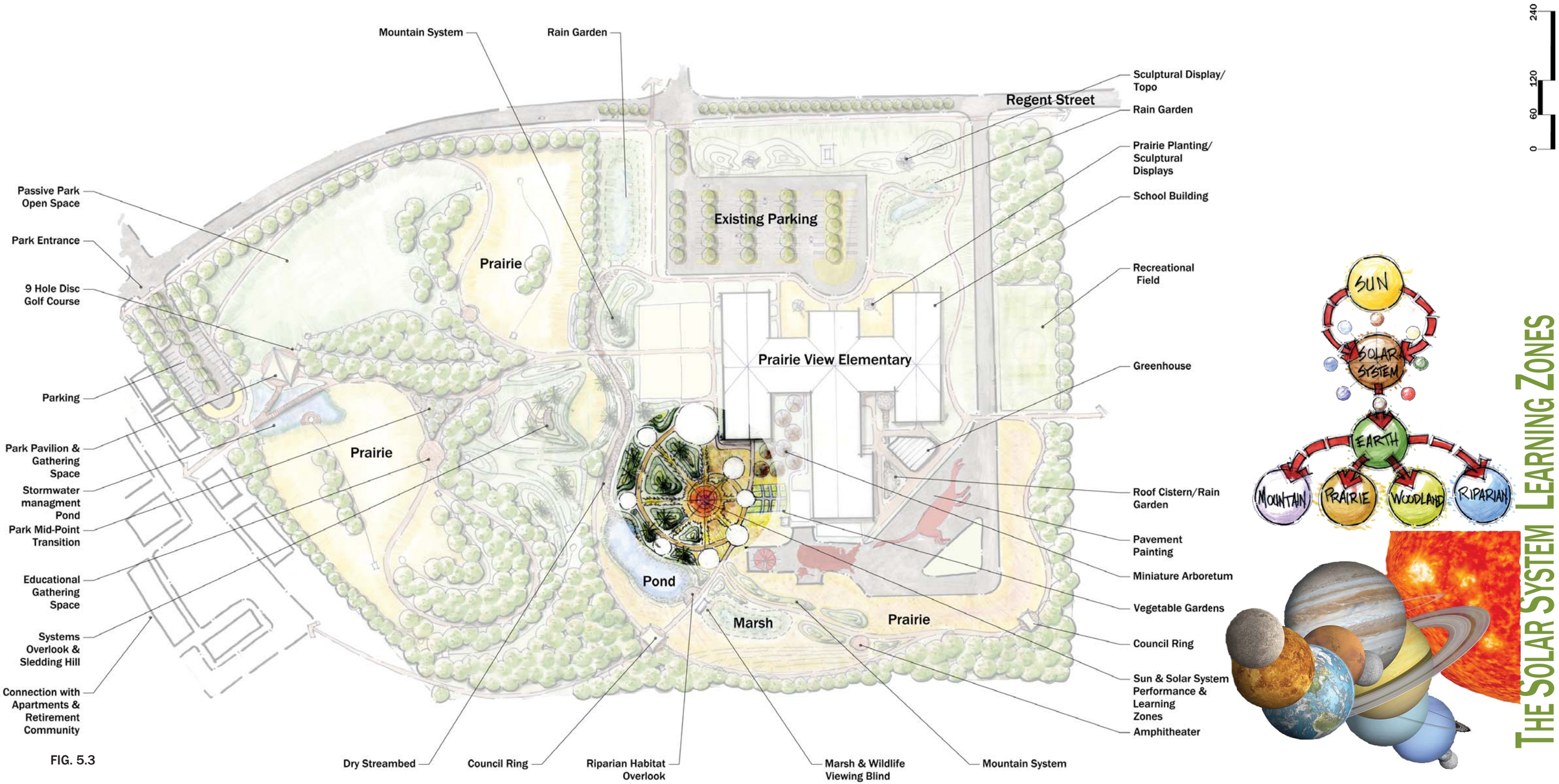
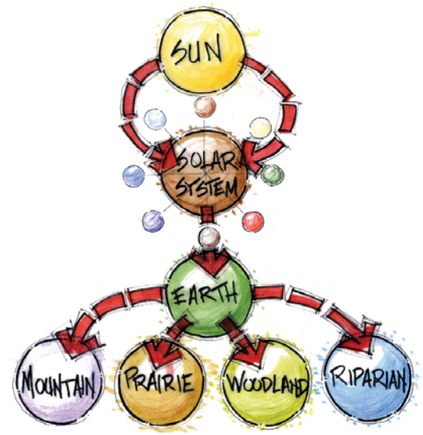


FIG. 5.3

The solar system creates a framework for programmatic elements such as specific classes for science, math, social studies and literature. It even creates spaces for vegetable gardens and an art studio.

FIG. 5.4



0 60 120 240

The Earth Landing Educational Zone

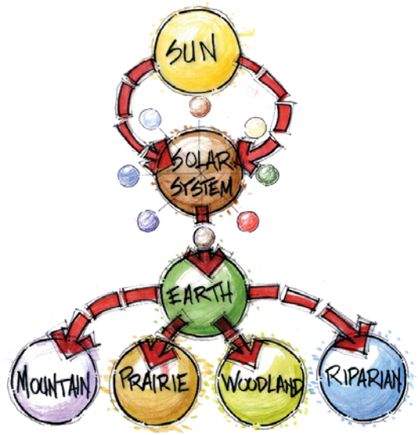
The excessive pavement from the bus drop off is creatively utilized to display 2 dimensional images on the ground that might be a geography lesson or a history lesson such as a dinosaur or even a sundial

FIG. 5.5

THE PRAIRIE SYSTEM LEARNING ZONE

The prairie system weaves it's way throughout the school design as well as the community park. It provides wildlife habitat learning opportunities and reaches back to a time before this development.

FIG. 5.6



THE MOUNTAIN SYSTEM LEARNING ZONE

The mountain system is an imaginative system created with topographical features, and a rock, boulder and plant palette. The mountain system enhances the schools recreation zone and seamlessly flows into the community park with the largest peak serving as both a systems overlook and sledding hill in the winter.

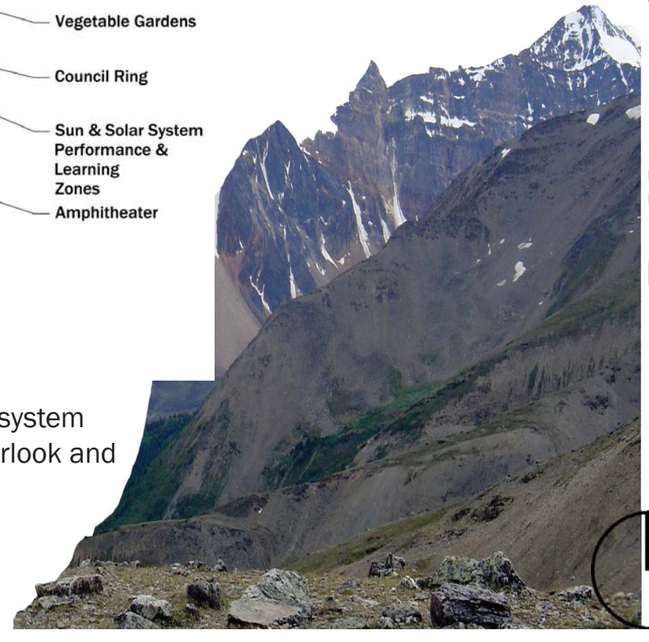
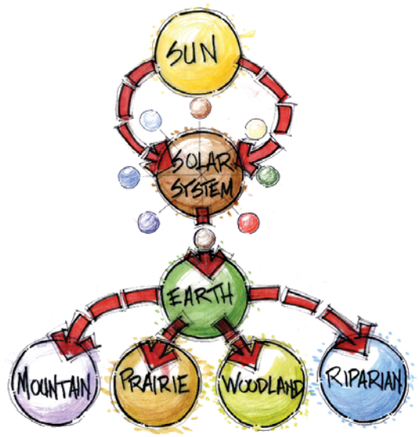


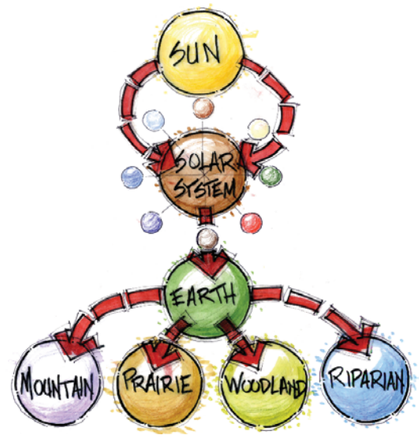
FIG. 5.7



THE RIPARIAN SYSTEM LEARNING ZONE

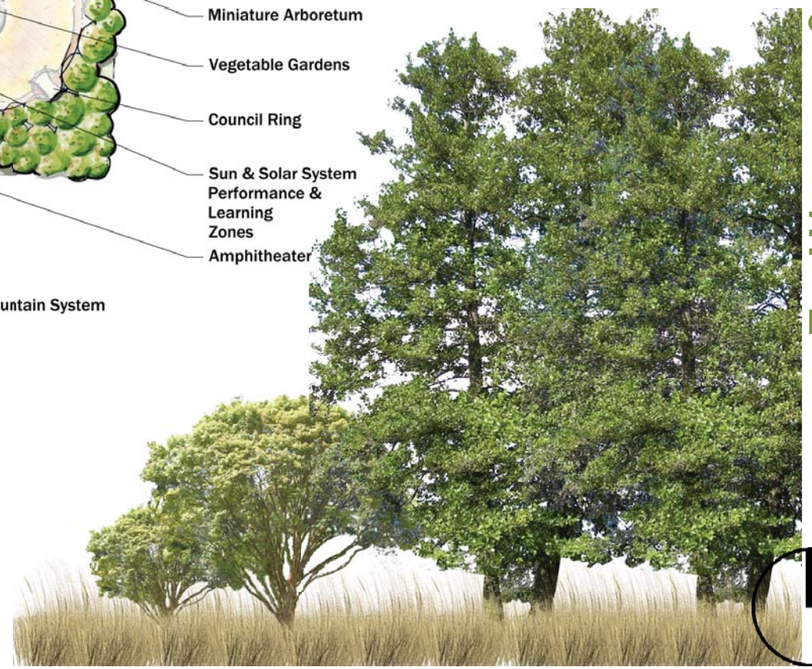
The riparian system takes advantage of the drainage and retention basins on site. Stormwater ponds and rain gardens transport students to a different world of aquatics and water habitat. The stormwater pond in the community park takes water from the parking and the neighboring apartments.

FIG. 5.8



Learning Zone

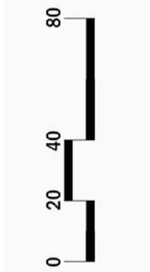
The Woodland System

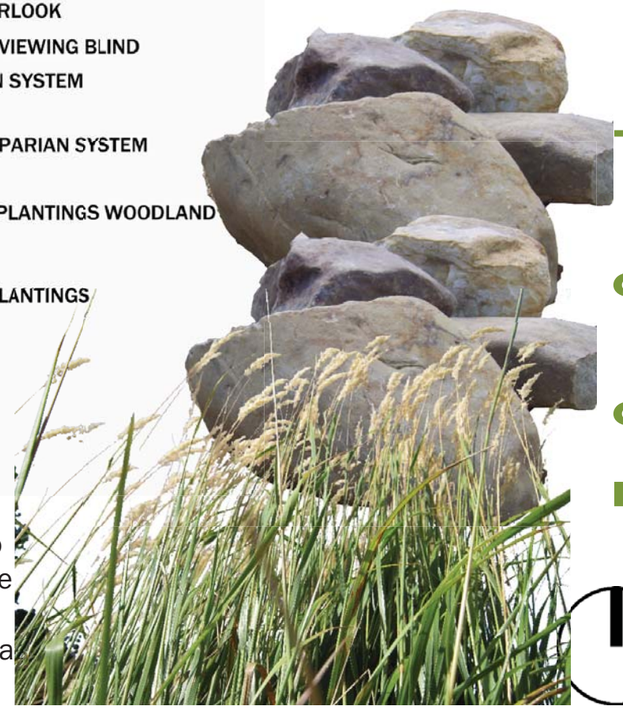


The woodland arboretum creates, unique spaces, a wildlife haven and sun, sight and wind screening.

Zone Enlargement

FIG. 5.9





The Solar System Learning Zone

This plan enlargement of the southwest portion of the school property conveys the relationship between the sun educational, gathering and performance zone, the solar system as well the pond, mountain, prairie and woodland habitats. The solar system is further broken down into educational zones. These zones include: the Mercury Art Studio, Venus Vegetable Garden, Earth Geography, Mars Math Zone, Jupiter Science and Weather, Saturn Literature and Reflection, Uranus Sand Archeological and the Neptune Play and Recreation Zone. The pond habitat is overlooked by a wood deck as well as the Jupiter Science Zone. The marsh is overlooked by a wildlife viewing blind and a council ring serves a a transition and instructive area between the prairie and woodland habitats.

THE MOUNTAIN TOP EXPERIENCE

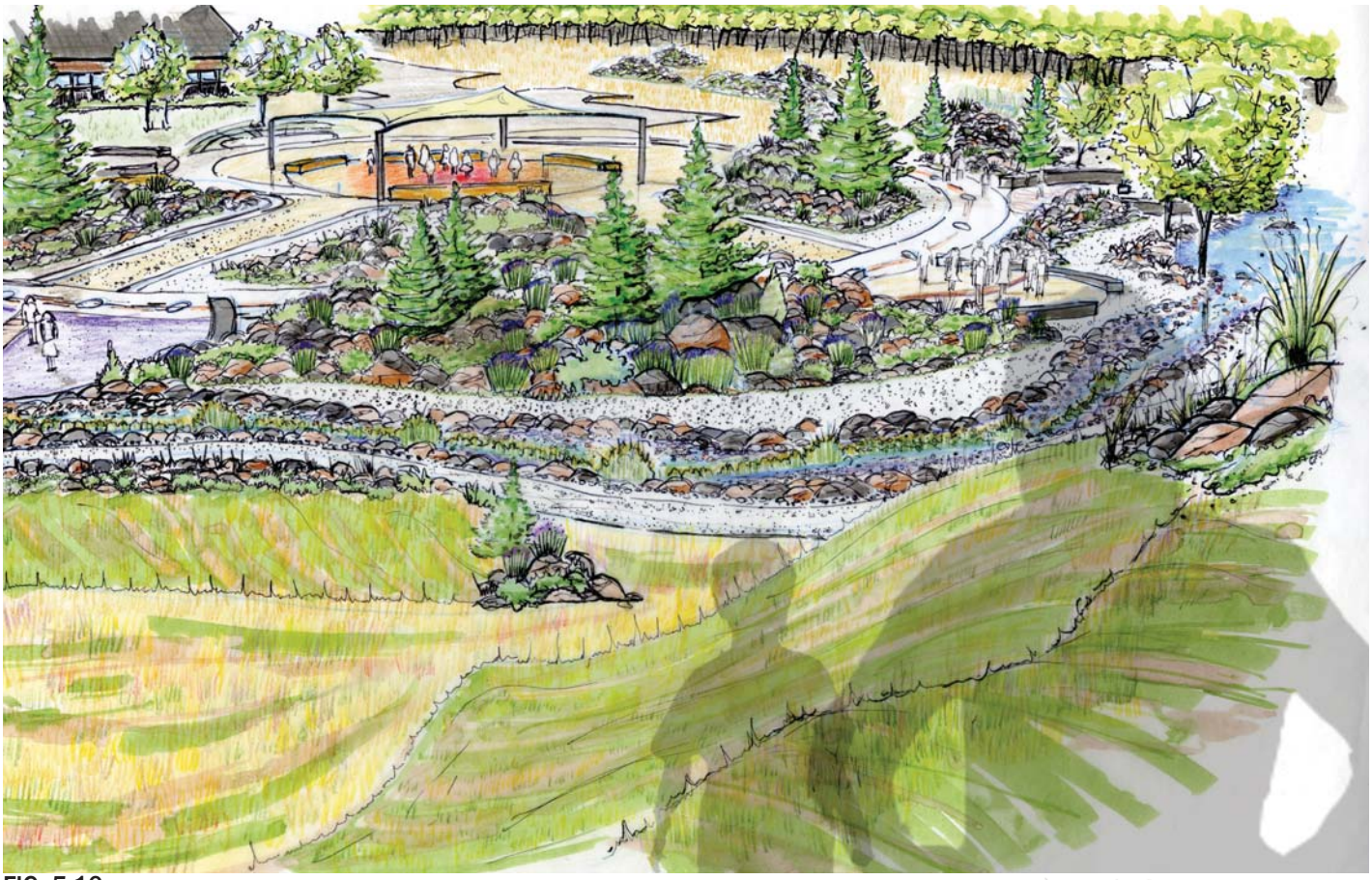


FIG. 5.10

The mountain top experience allows students and visitors to get a feel for how all of these systems come together to form the environment. From a bird's eye perspective students will witness the mountain topography rolling into the prairie and the riparian system flowing through. All of this is bound together by the woodland system at the property edge. In the winter this large peak will serve as a sledding hill for the students and community.

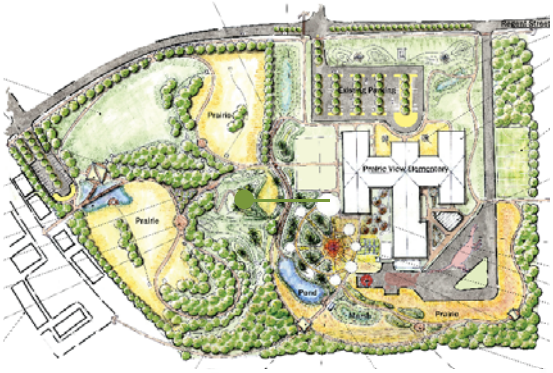


FIG. 5.11

This section features the mountain zone and it's transitions. The major peak serves as an overlook and sledding hill. This transitions into the foothills. A dry streambed creates a valley. Students are free to explore, reflect, read write and use their imagination and creativity to play. The topography transitions into the existing play structures.

THE SOLAR & RIPARIAN SYSTEM EXPERIENCE

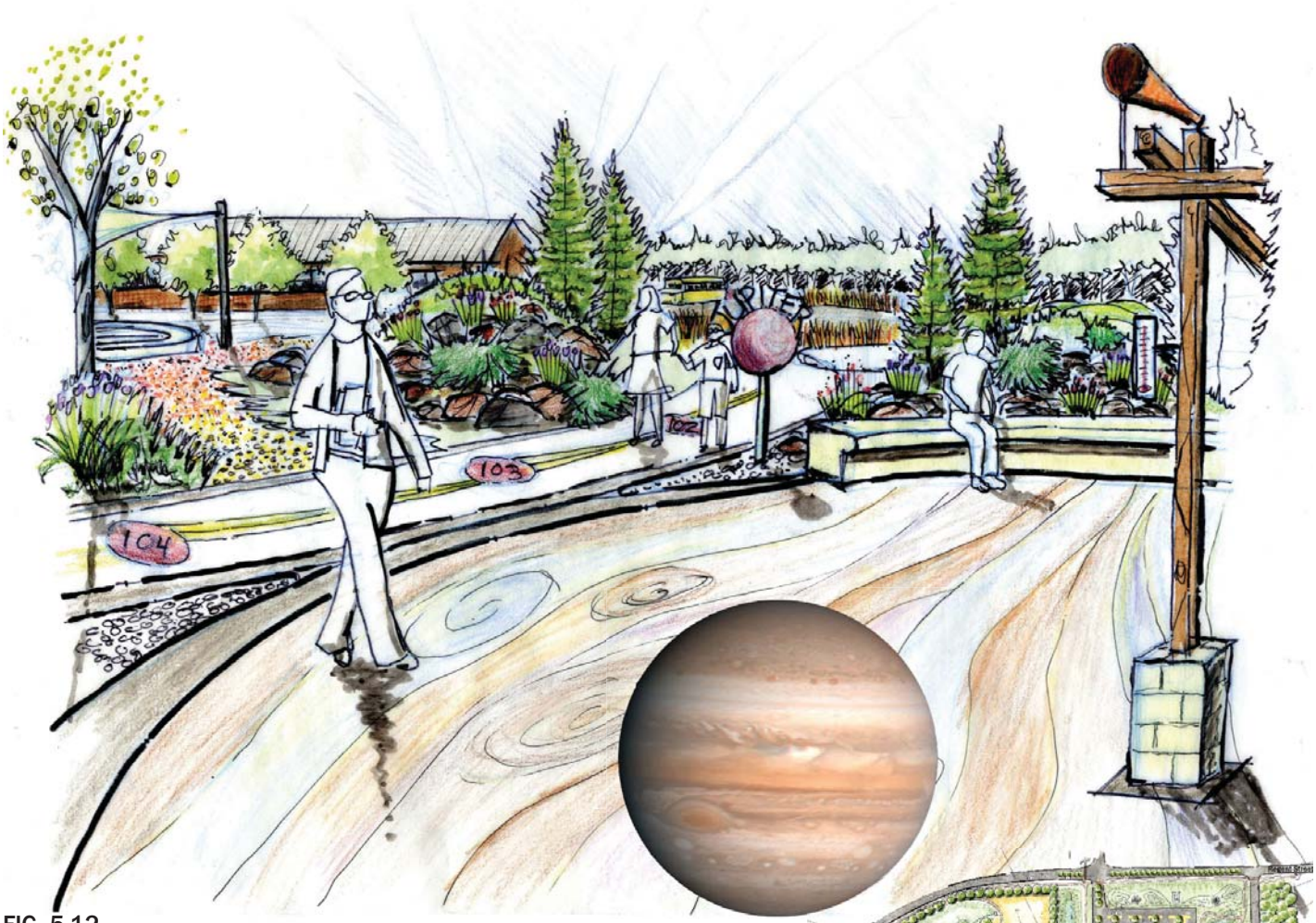


FIG. 5.12

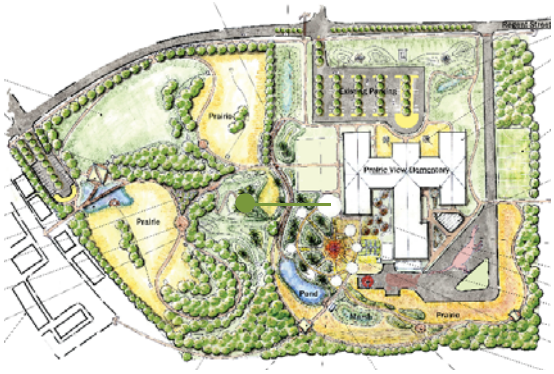
This perspective brings the solar system classroom alive. As one walks down the mathematical “comet path” they come to Jupiter. The colored concrete paving takes on the features of the actual planet Jupiter. This classroom is dedicated to the science subject. A weather station is hinted at where students can check rain gauges, wind speed and direction and even make future forecasts. The mountain system weaves through the planets.

FIG. 5.13

This section is cut through the major riparian zone in the southwest portion of the outdoor learning environment. The stormwater pond is featured to the east, while the wildlife viewing blind looks out over the marsh habitat and on to the prairie area. Different aquatic species are introduced such as turtles and catfish. The marsh creates a haven for bird habitat. The crushed stone creates a safe and accessible path for students and community to enjoy and take part in the educational environment.

THE WOODLAND SYSTEM EXPERIENCE

FIG. 5.14



As students explore the woodland habitat they are exposed to a large variety of midwest plant types and species. The biology text book comes to life as flowers bloom, the vegetation changes with the seasons and abundant wildlife call the tree canopy home. The students in the foreground may be collecting leaf specimens for a biology project or experiencing first hand what Henry David Thorough was writing about in their Literature class. The council ring in the middle ground is used as a space for classroom instruction, reflection and relaxation. It takes advantage of both the woodland and riparian systems as it serves as the transition space between the two. The wildlife viewing blind can also be seen overlooking the prairie and marsh habitats. The school building itself can be seen in the background giving students reference as to where they are in the learning landscape.

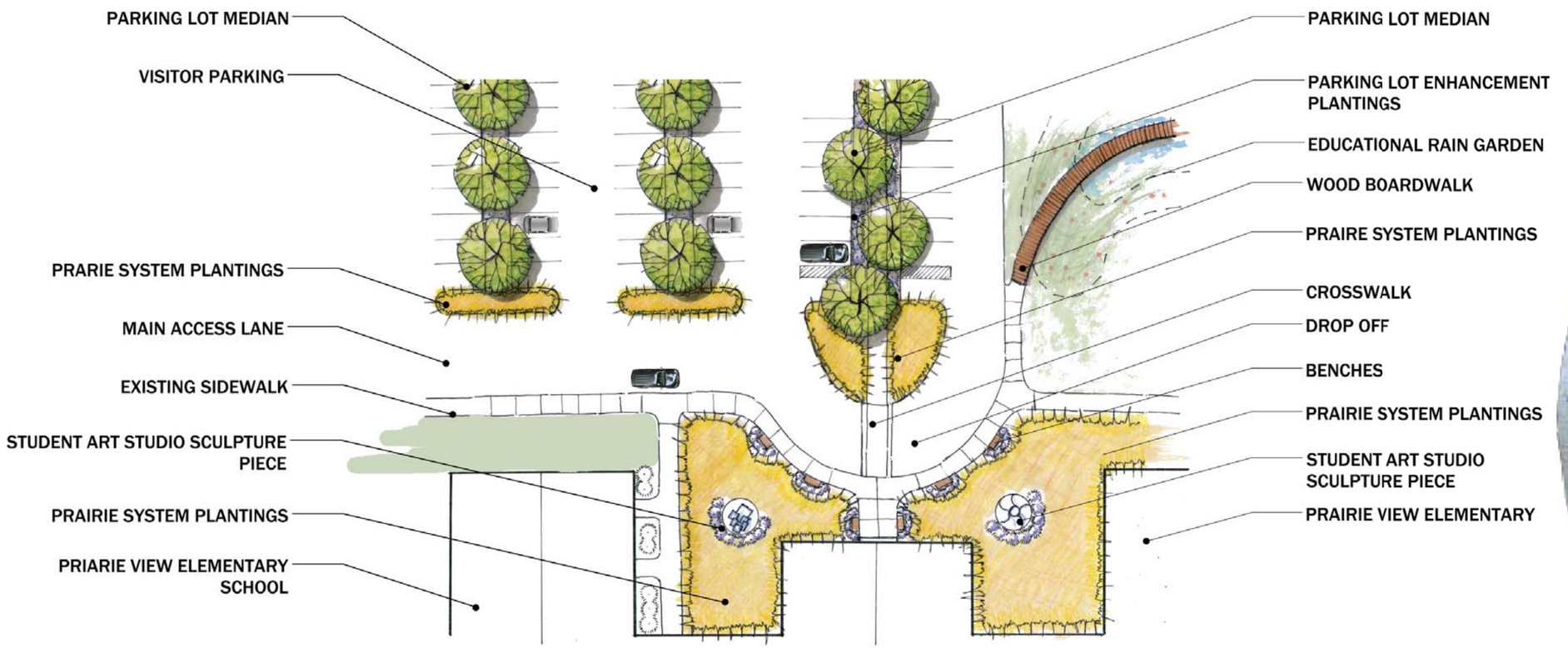
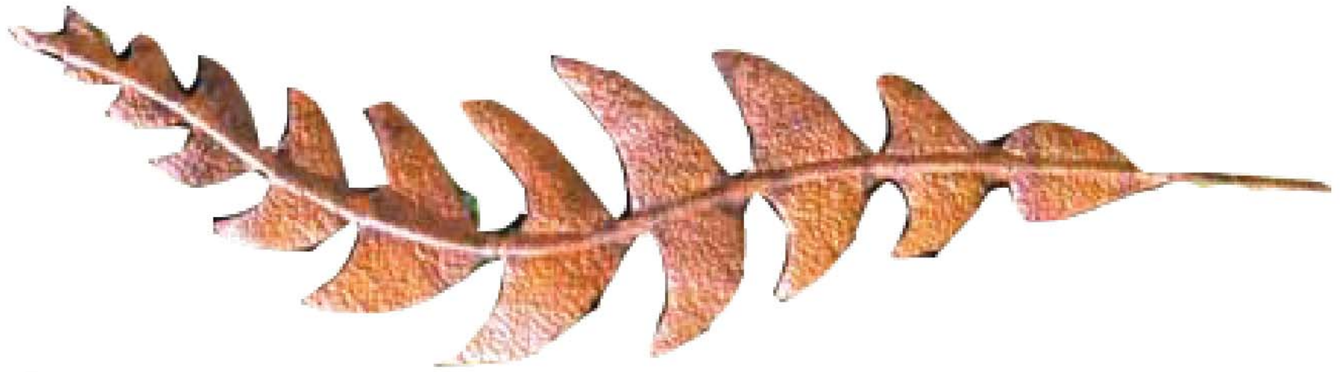


FIG. 5.15

The Main Entrance Experience Enlargement

The main entrance, parking and drop off take advantage of the prairie habitat and plantings in order to create a statement and sense of arrival. This also plays off of the name of the school itself. Medium size parking lot trees are implemented in order to give shade to visitors. Various prairie plantings create something beautiful out of what some might have thought an eyesore. Two locations are created in order to display student art that has been created in the outdoor art studio. This displays the schools pride in their students.



STUDENT DROP OFF EXPERIENCE

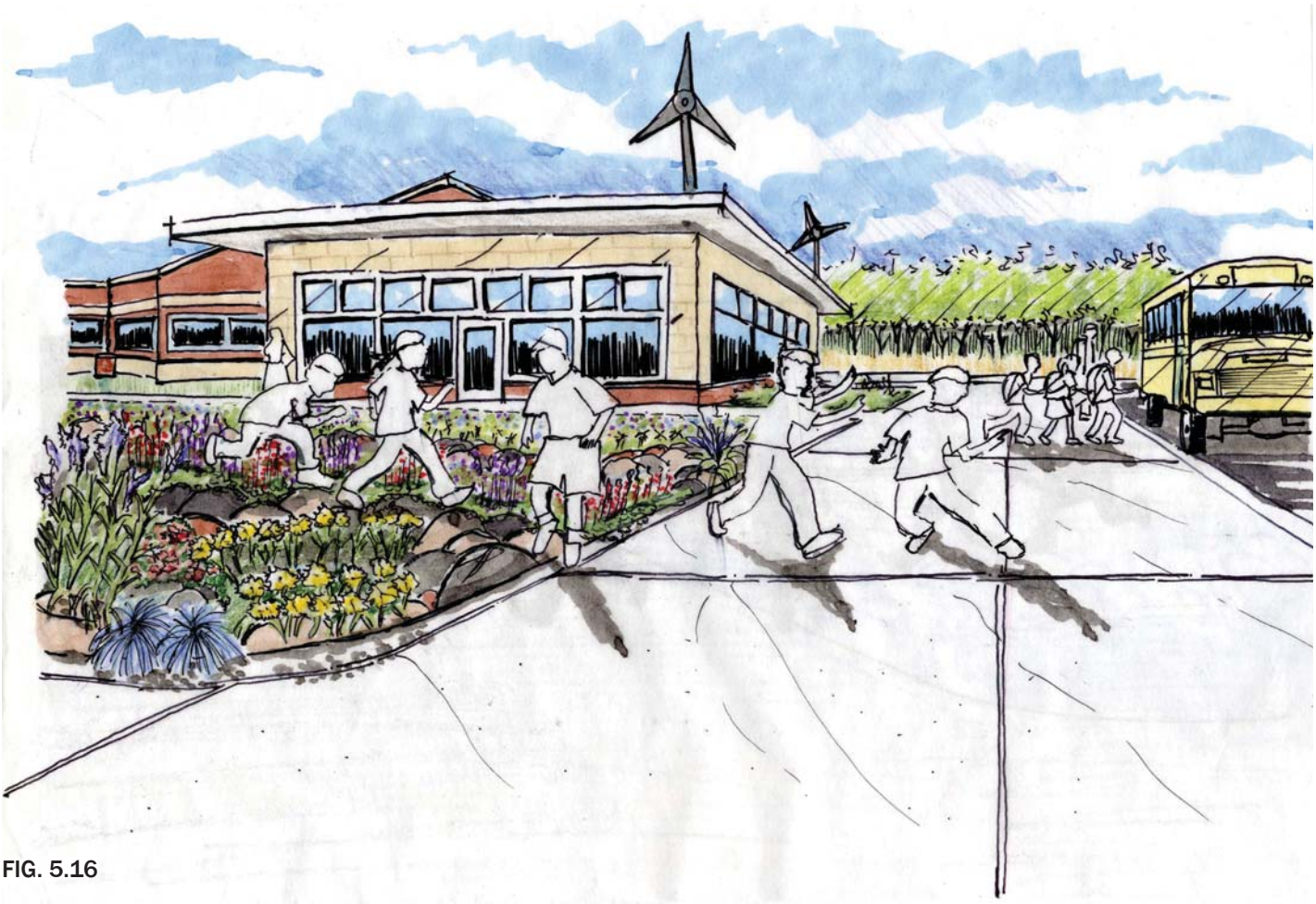


FIG. 5.16

As students wait for the bus they have the opportunity to explore and run through the rain garden. Water is taken from the roof of the school and into the rain garden. The rain garden plants filter the water and allow it to percolate back down into the water table. The rain garden plantings break up the monotony of the extensively used lawn. It introduces a large variety of color and form with rocks integrated to provide space for students to walk in and among the plantings. The green house is integrated in close proximity to the existing school building. This will give students the opportunity to use it during the colder winter months. While the majority of the landscape is dormant in the winter, the plantings inside the greenhouse can be thriving. This would be a great opportunity for students to learn passive energy systems as the electricity would be generated through wind turbines integrated with the greenhouse building.

PASSIVE PARK RECREATION SPACE

BIKE RACKS INVITE MAPLE CITY GREENWAY USES

PARKING LOT MEDIAN

PARKING

EVERGREEN SCREENING

PARKING LOT ENHANCEMENT PLANTINGS

APARTMENT COMPLEX

DISC GOLF TEE BOX # 5

PARK ENTRANCE NODE UTILIZING BIKE RACKS

PRAIRIE FAIRWAY PLANTINGS

EVERGREEN SCREENING

DICS GOLF TEE BOX # 1

WOODLAND FAIRWAY PLANTINGS

PUBLIC PARK GATHERING SPACE

WOOD BOARDWALK

STORMWATER POND FROM PARKING & APARTMENTS

DISC GOLF FINAL HOLE LOCATED ON WOOD DECK OVERLOOK

NATURAL PRAIRE SYSTEM PLANTINGS

PRAIRIE FAIRWAY PLANTINGS

0 20 40 80

FIG. 5.17

This enlargement portrays the Prairie View Park experience. Sufficient parking is provided with shade trees. A strong connection is made to the apartment complex and surrounding complex. Bike racks create an inviting environment for pedestrians and users of the Maple City Greenway. The large gathering space shaded by shade sails invite large groups of people to use and enjoy the park. A passive recreation space is preserved to the north of the site. The 9 hole disc golf course begins and ends in the area. The stormwater riparian habitat takes water from the parking and some from the apartment complex.

Prairie View Park Experience Enlargement

PRAIRIE VIEW PARK EXPERIENCE

FIG. 5.18

Prairie View Park integrates a variety of uses in order to create a destination for the community. This sketch portrays the experience of finishing the ninth and final hole of the disc golf course. The disc golf course explores and celebrates the natural systems as it weaves its way through them. The final hole presents a unique challenge as it finishes on a deck overlooking the stormwater pond. The boardwalk and gathering space can be seen in the background.

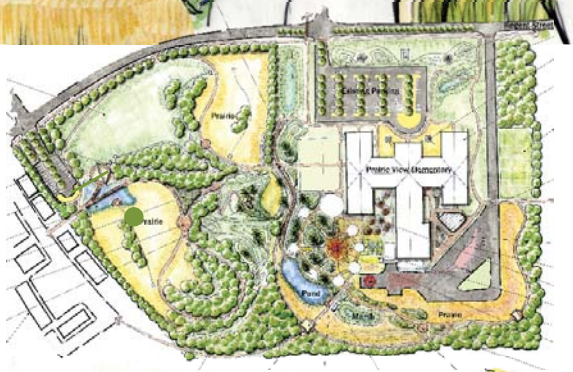


FIG. 5.19

The community park comes alive as this section displays the amenities and their relationships. Parking is provided in close proximity to gathering pavilion which is protected through shade sails. This serves as a catalyst for the passive park space as well as a disc golf course. Bike racks are provided and connections to the Maple City Greenway to the west of the site are encouraged. The stormwater pond takes runoff from the parking lot and the apartment complex.

THE SUN CLASSROOM & GATHERING ENGINEERING DETAIL

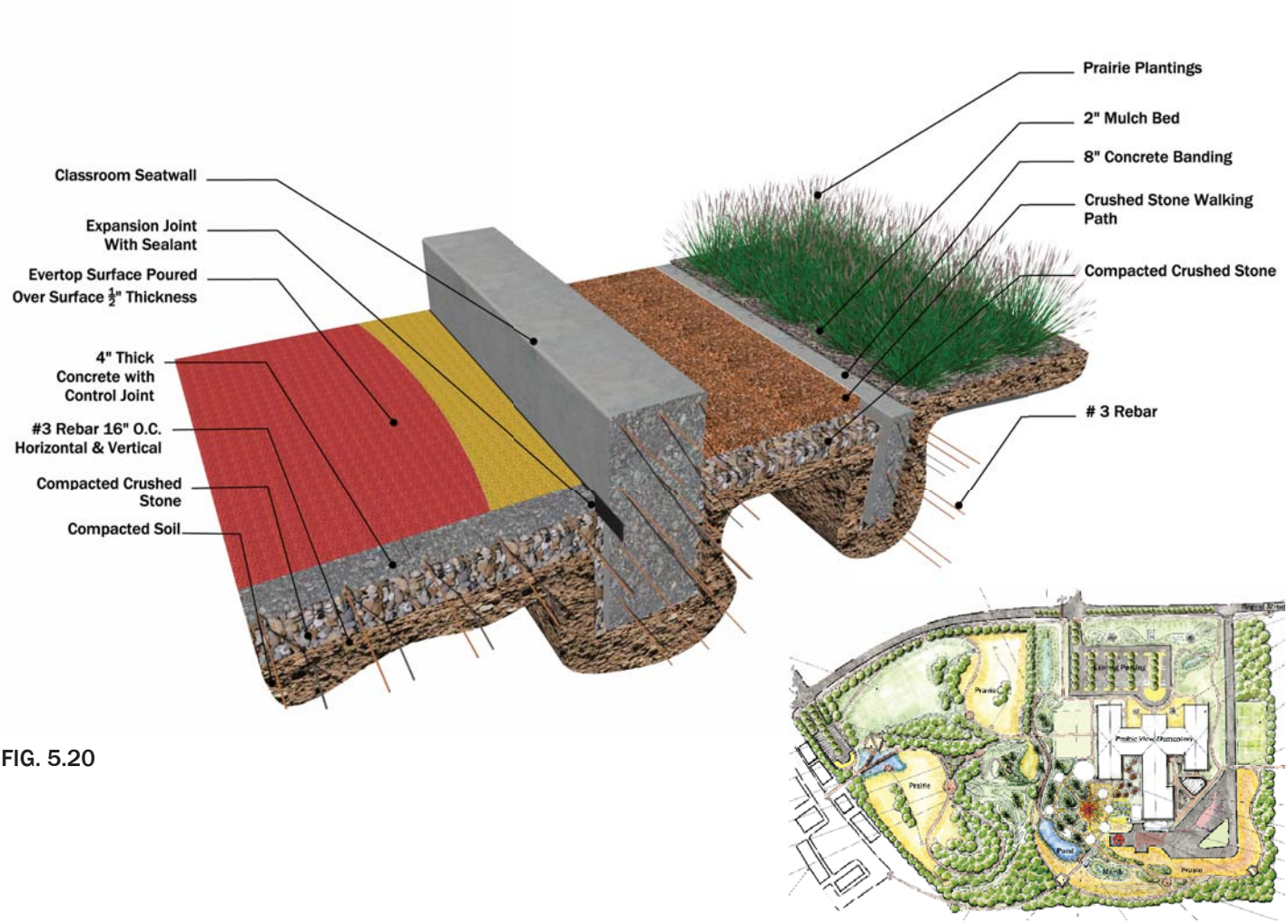


FIG. 5.20

THE RIPARIAN SYSTEM OVERLOOK DECK ENGINEERING DETAIL

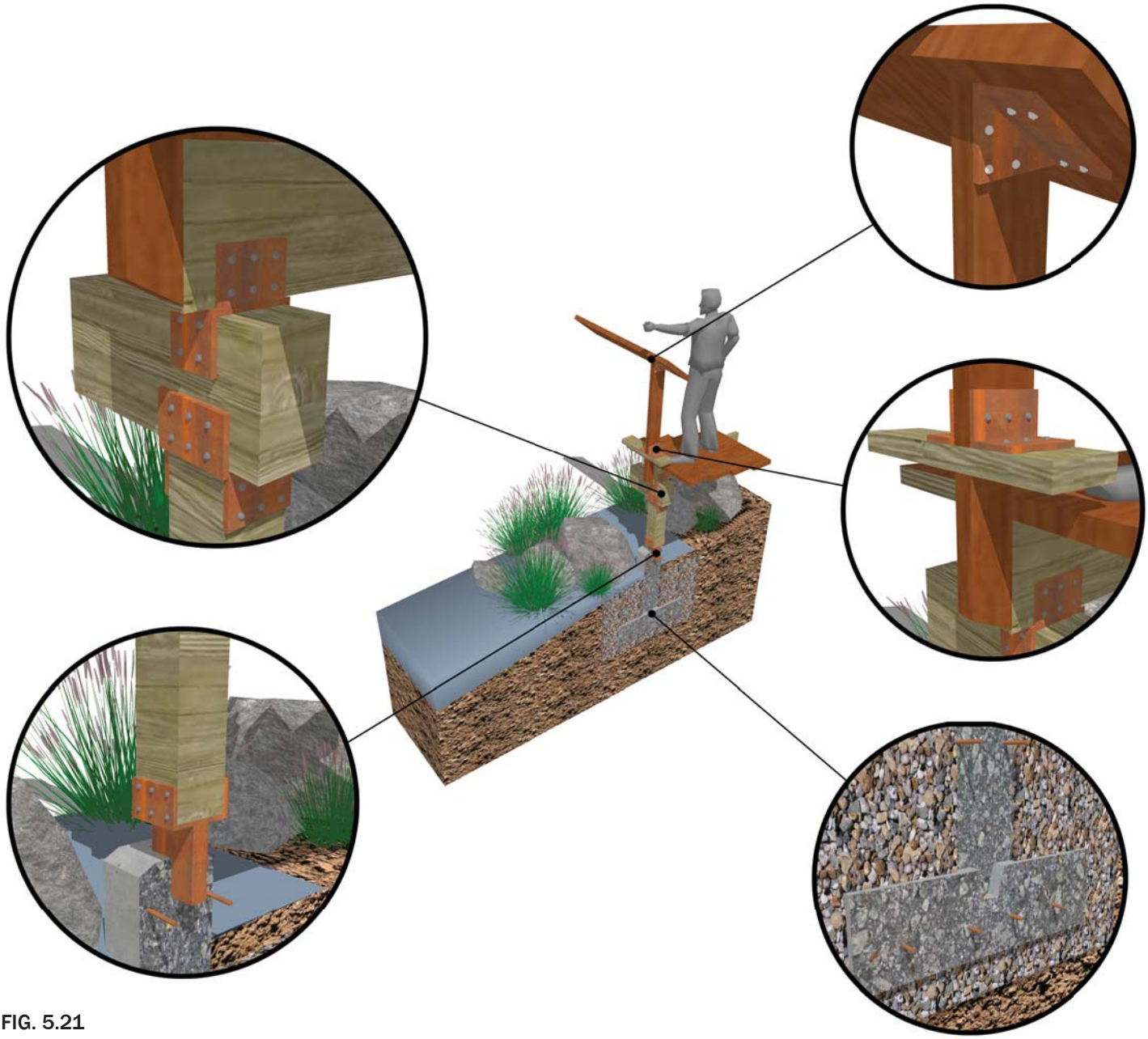
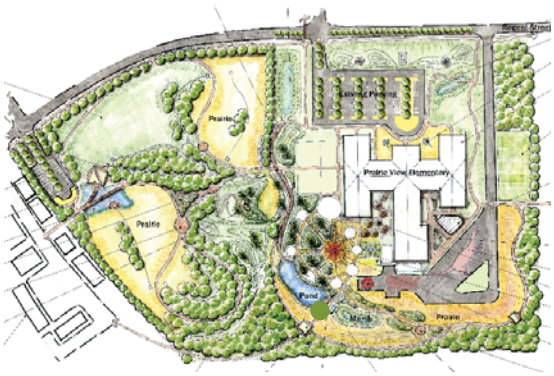


FIG. 5.21



SOUTHWEST LEARNING LANDSCAPE PLANTING DETAIL

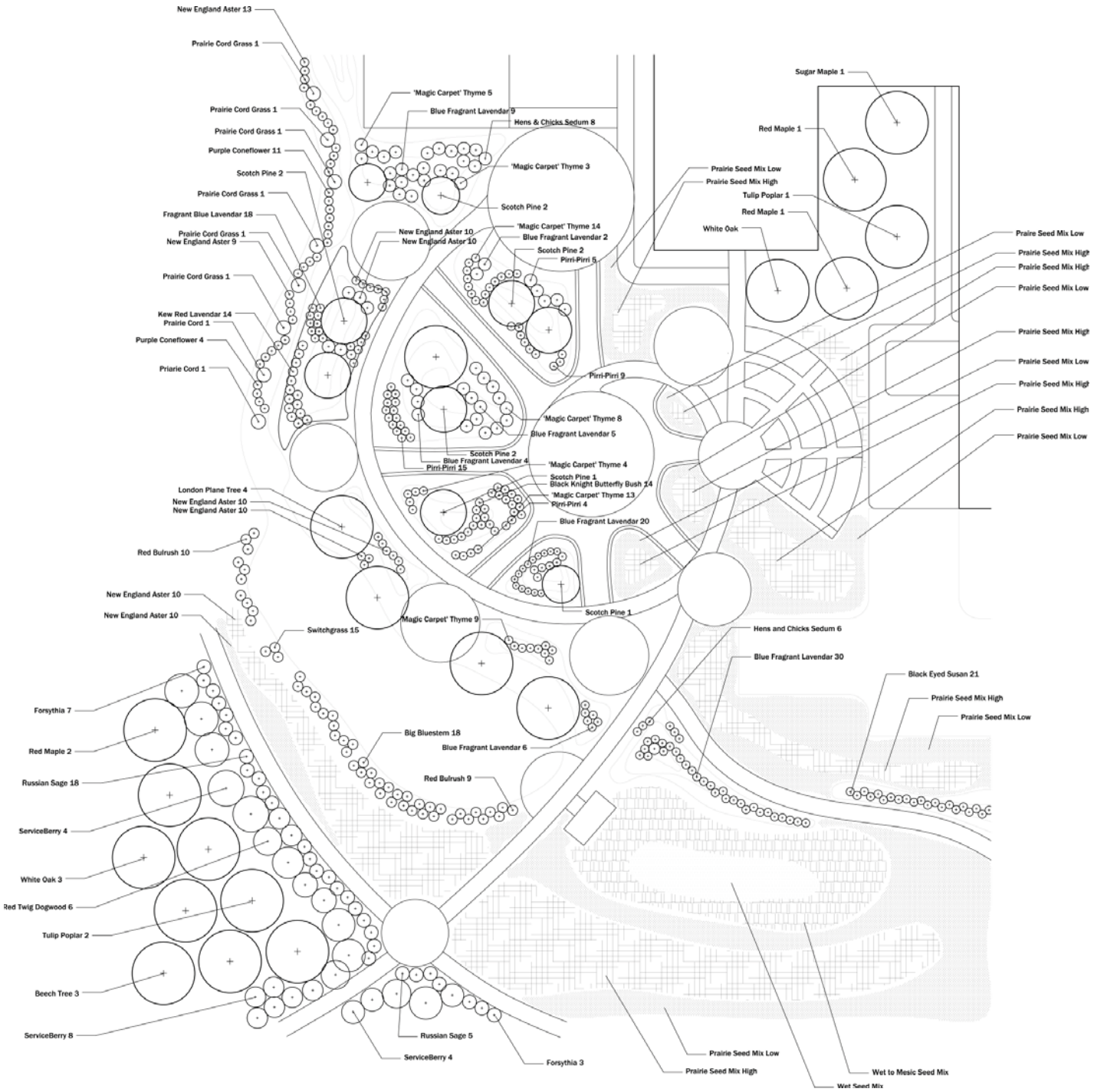


FIG. 5.22

PRAIRIE VIEW PARK PLANTING DETAIL

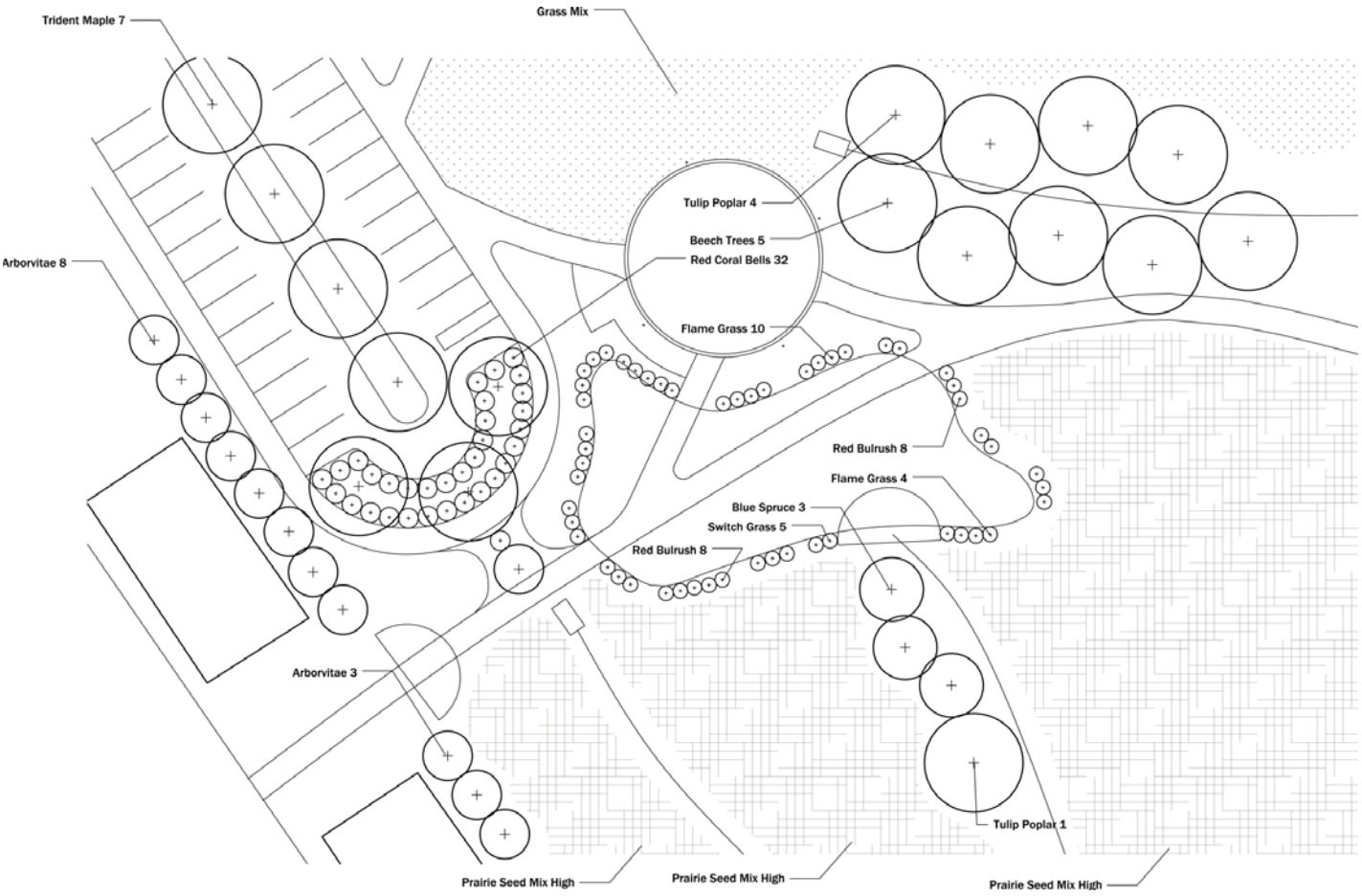


FIG. 5.23

MAIN ENTRANCE PLANTING DETAIL

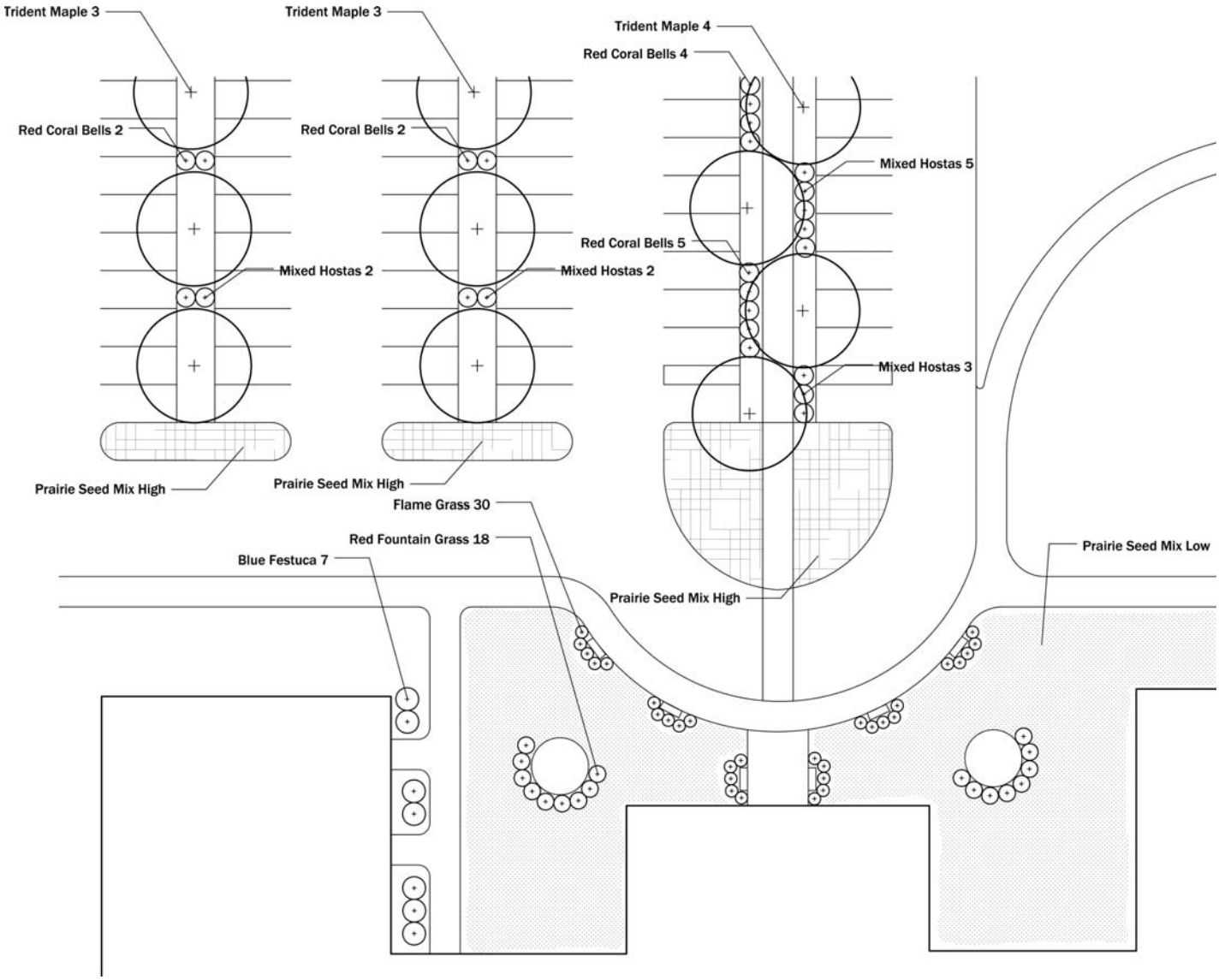


FIG. 5.24

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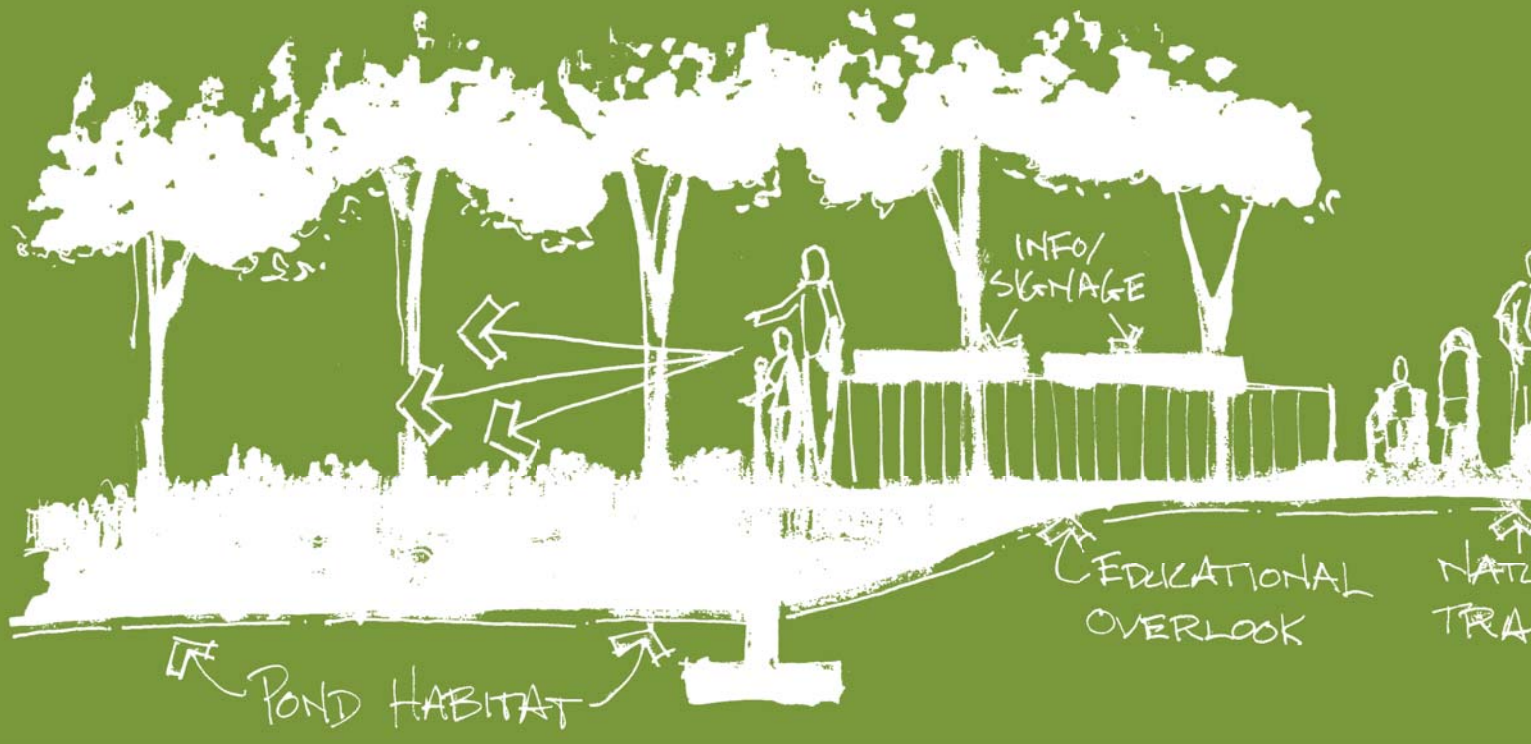

CONCLUSION

The overarching goal of this project is to provide a catalyst for the integration of a learning landscape at Prairie View Elementary as well as other schools and institutions around the world. This project seeks to expose students to a very unique and stimulating environment in order to encourage further exploration, imagination and creativity. In addition it allows students to develop a love for the outdoor environment and a better understanding of how it works, which can be taken into their adult lives and integrated into their lifestyle.

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